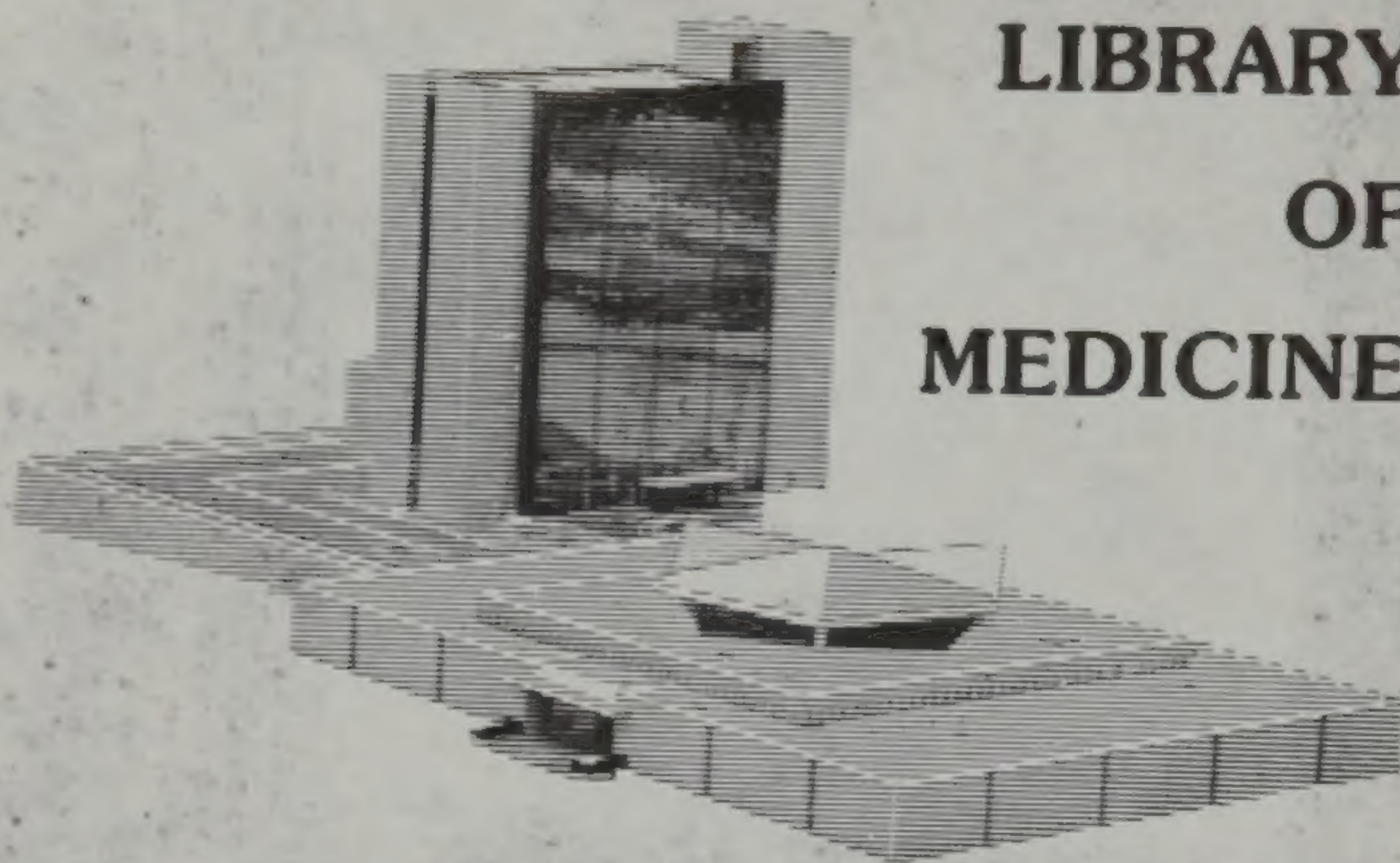




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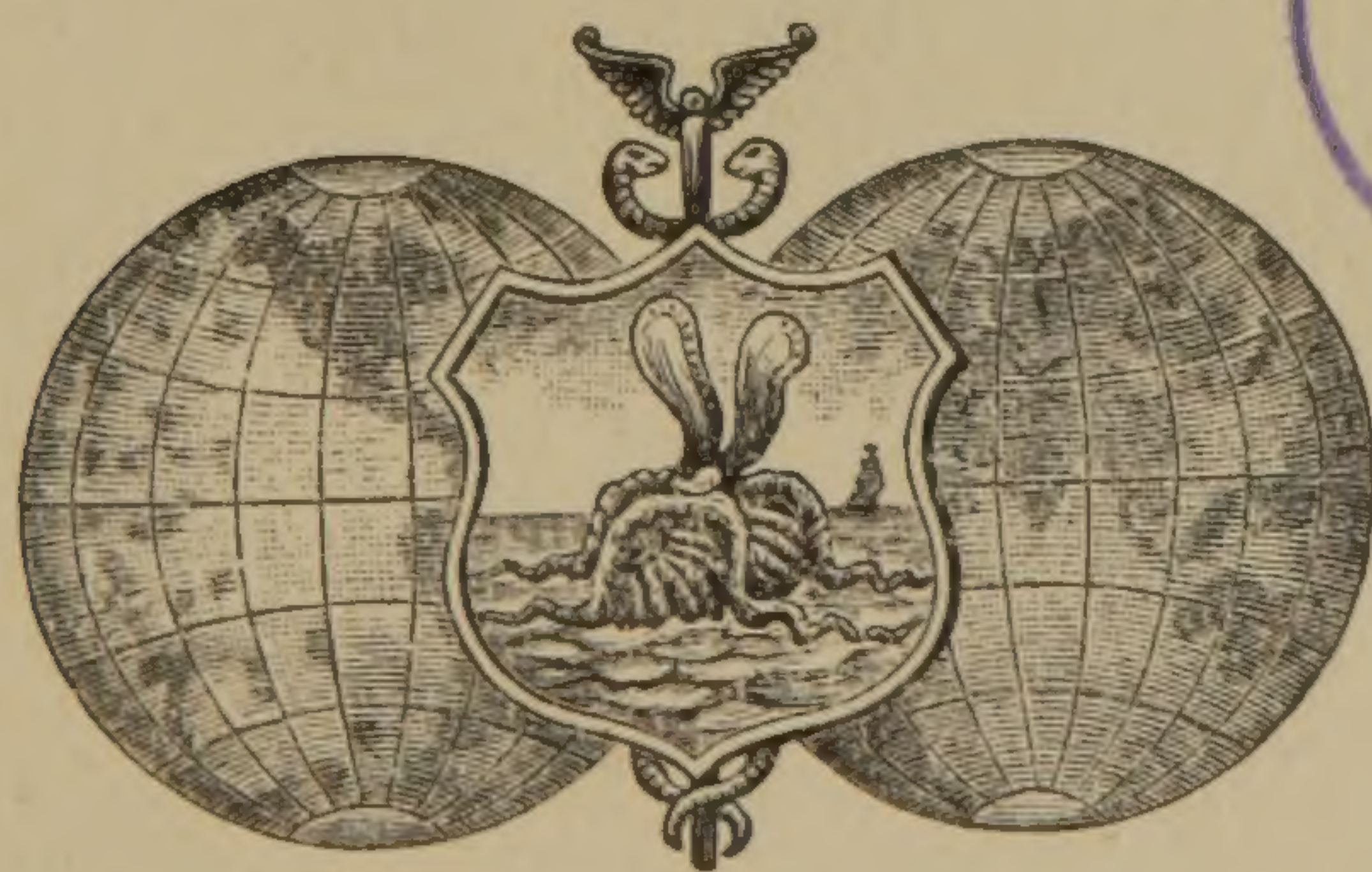
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LESSONS
IN
GYNECOLOGY:

BY
WILLIAM GOODELL, A.M., M.D.,
PROFESSOR OF CLINICAL GYNECOLOGY IN THE UNIVERSITY OF PENNSYLVANIA, ETC.

THIRD EDITION,
THOROUGHLY REVISED AND GREATLY ENLARGED.

WITH ONE HUNDRED AND TWELVE ILLUSTRATIONS.



PHILADELPHIA AND LONDON:
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DEDICATION.

TO

S. WEIR MITCHELL, M. D., LL.D.

AS A TOKEN OF WARM FRIENDSHIP AND OF HIGH ESTEEM.

WILLIAM GOODELL.

WP

G648L

1890

PREFACE.

THIS book is not a complete treatise upon the diseases of women, but mainly the outcome of clinical and of didactic lectures, delivered to the third-year students of the Medical Department of the University of Pennsylvania.

Some of these Lessons have been furbished up from notes of my lectures taken in short-hand by reporters. Others, of a didactic character, have been made up from my contributions to medical journals, and I have, therefore, not hesitated to sacrifice unity of time to unity of the subject.

Through the kind appreciation of my professional brothers, the second edition, although a large one, was soon exhausted, and, owing to a very busy life, which kept me from all literary work, this book has long been out of print.

In offering to the Profession this, the third edition, I have tried to make it, in every way, a better one than the preceding ones. To this end, each Lesson has been not only carefully revised, but very materially enlarged by fresh matter, and six new Lessons have been added, together with twenty more illustrations.

1418 Spruce Street, Philadelphia, June 24, 1887.

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LESSONS IN GYNECOLOGY.

LESSON I.

GYNECOLOGICAL INSTRUMENTS; GYNECOLOGICAL TABLE

GYNECOLOGICAL INSTRUMENTS.

THE ordinary working tools which you should carry in your satchel, and which I therefore recommend you to purchase at the outset of your practice, are as follows:

One base-opening bivalve speculum (Goodell's), whose blades are not over four inches long, and are one inch and a quarter wide.

One duck-bill speculum (Sims's).

Two glass speculums (Fergusson's), the one not longer than five inches and three-quarters, with the smaller aperture measuring one inch and a quarter in diameter; the other five inches long, and at the smaller aperture seven-eighths of an inch wide.

Two applicators of aluminium wire, with one adjustable handle.

Two uterine tenacula.

One small volsella forceps.

One fenestrated polypus forceps.

One speculum forceps.

One dull curette (Thomas's), and one sharp curette (Sims's).

One uterine sound.

One vesical sound.

One hard-rubber uterine syringe with a long flexible nozzle.

Two uterine dilators (Goodell's), of different sizes.

One Buttle's lance-pointed scarificator.

This list by no means exhausts the number of instruments needed for special cases of uterine disease. But, in my opinion, no one can intelligently and successfully treat the ordinary diseases of the womb without, at least, the foregoing instruments.

The uses of each instrument will be indicated in the proper place; but a word here with regard to one article on the list: The probes, or applicators, of aluminium wire, are chosen because this metal is flexible, and it resists the action of most of the corrosive agents employed in uterine therapeutics. A sliding and removable handle is recommended for these applicators, both because a fixed one makes the instrument too long for easy carriage, and because I have found that the wire is very liable to break off at the line of junction with the handle.

As a setting to the subject of the selection of instruments, I wish to give you one broad and practical rule regarding their general use. Let all those of you who are right-handed, learn to use the left hand for making uterine examinations and for other inside work. This leaves a clean right hand for manipulating the various instruments, and for any needful outside work. Again, this will give you an obstetric hand and a gynecological hand. With your left hand you will make all rectal and vaginal examinations—that is to say with it you will do all your dirty work. Your right hand you will reserve as much as possible for obstetric work. By this precaution you will be less likely to carry poison-germs from womb to womb, and to infect your puerperal patients.

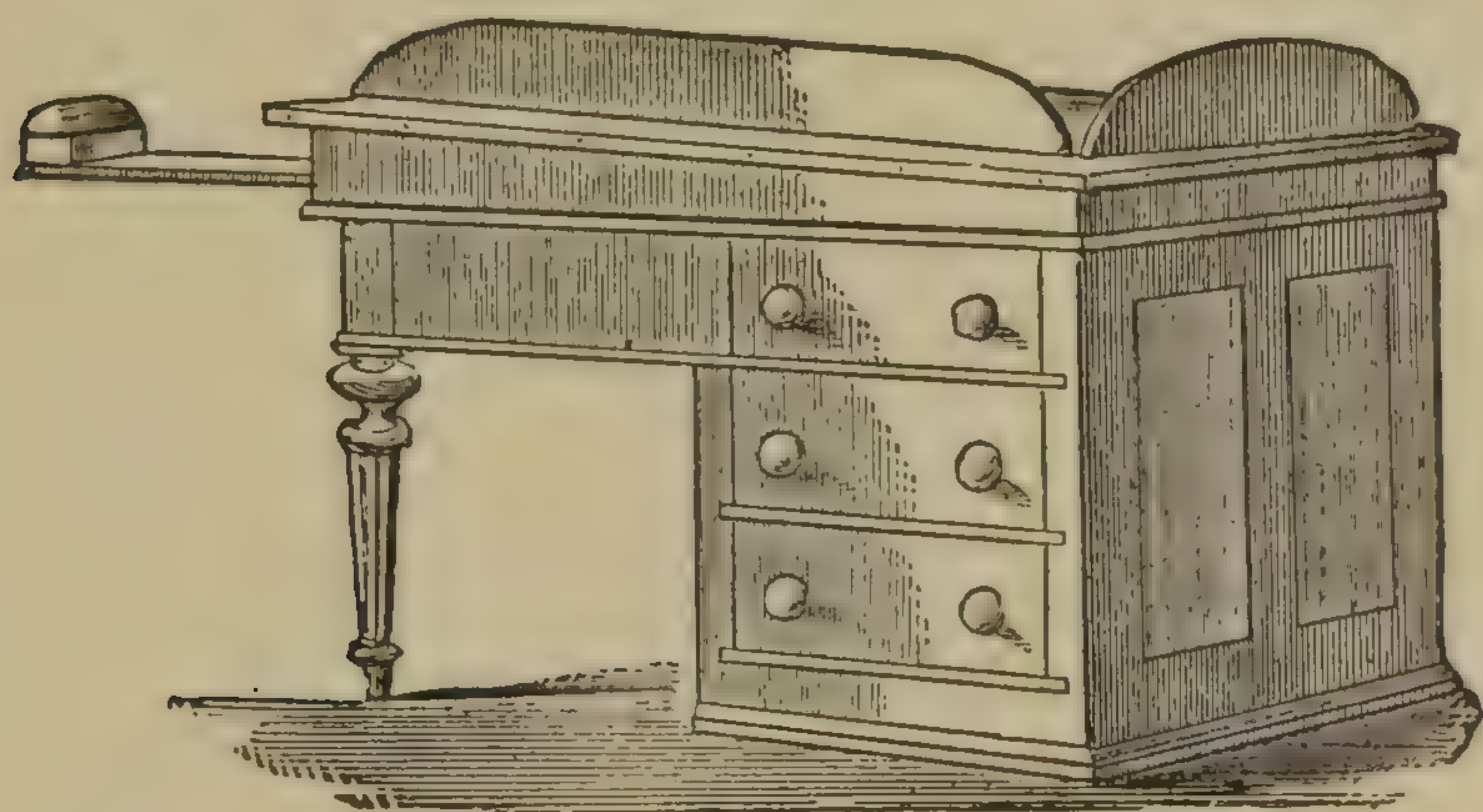
GYNECOLOGICAL TABLE.

Whenever you examine your patients at their own homes, you will find an ordinary kitchen or a breakfast table the very best thing on which to place them. But most ladies prefer that their servants should be kept in ignorance of the treatment which they are undergoing, and the physician is therefore very generally compelled to resort to a bedstead. To use

this article of furniture to the best advantage, it ought to be wheeled towards a window, and, in order to prevent any sinking in of the bed, a lapboard should be placed under the spread. But, since all such examinations are tedious and liable to be unsatisfactory, I advise you to cultivate an office practice, and teach your walking patients to come to you, instead of sending for you. At your office you will have just the proper light, and just the proper means for such a purpose. And this brings me to the consideration of the best means for making such examinations.

Many physicians use an ordinary lounge—one without a foot-board. Others prefer some one of the many examining

FIG. 1.



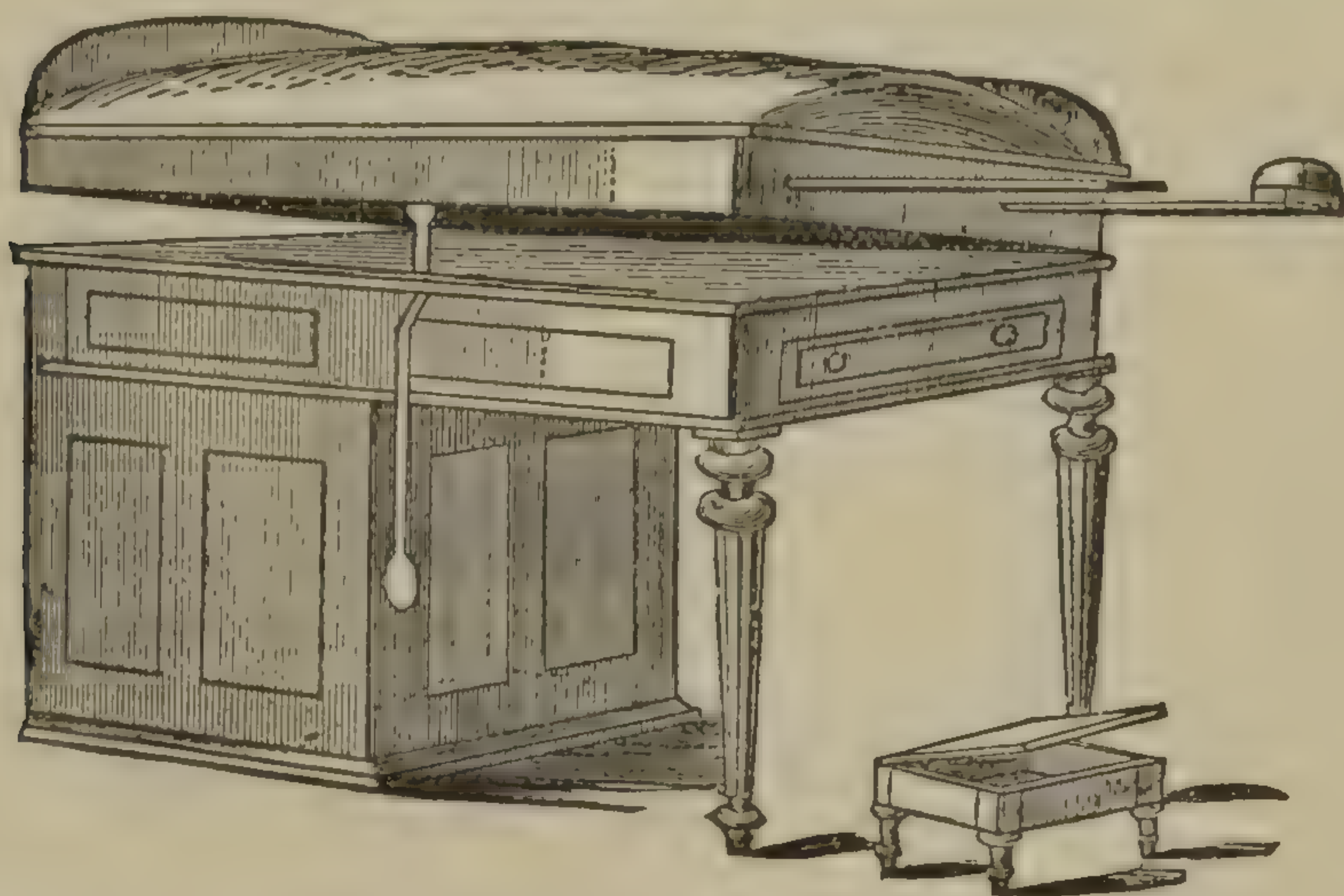
GYNECOLOGICAL TABLE.

chairs. I myself think that nothing equals a good upholstered table—such as the one I now show you. (Fig. 1.)

It is a slight modification of one devised by Dr. T. G. Thomas, and improved by Dr. M. D. Mann, of Buffalo, N. Y., and was made for me by Lewis Thompson & Co., of Philadelphia. It is forty-six inches long, twenty-seven wide, thirty-two high at the foot, and twenty-nine at the head. It slopes three inches from foot to head, and the hips of the patient are, therefore, on a higher plane than her shoulders. It has a head-piece and one side-piece, which are removable. It is furnished with one drawer in front for instruments and for the applying fluids, and with three drawers on one side

for pessaries and for other purposes. It has two foot-rests, one for each foot when the woman lies on her back. The left one is tipped with a padded block, on which the left ankle and foot rest, when the semi-prone posture is assumed for the introduction of Sims's duck-bill speculum. In this posture the woman lies on her left side, with her left arm behind her back, the chest prone, the knees drawn up, and the nates brought down to the edge of the table. In order to make the abdomen still more prone, and thus to facilitate the entrance of air into the vagina, the upholstered top of the table is so hinged to the frame as to permit one side of it to be raised up

FIG. 2.



SHOWS THE LEVER AND THE LATERAL DIP OF THE TABLE.

by a lever, while the woman is lying upon it, thus giving her body a lateral slope, or dip, of four inches—(Fig. 2). The side-piece (better shown in Fig. 1,) is then needed to keep the woman from slipping off the table. To utilize room, the stool on which the woman steps in getting on and off the table, is merely a box on legs, with a lid to it. It holds the cotton-wool, or any other like needful article, within easy reach of the operator.

It has been urged that an examining table, like this one, presents so formidable an appearance as to deter timid women from coming to the office of the physician. This objection

does not hold good; for, whenever a woman has made up her mind to submit to an examination, she is willing to have it conducted in the manner which her physician deems the most suitable. After having examined the same patients on reclining chairs, on lounges, on their own beds, and on my table, I have had them express a preference for the last.

It is an excellent plan to have a female attendant in one's office. She helps the lady in getting on and off the table, and adjusts her clothing. She also holds the duck-bill speculum *in situ*, cleans soiled instruments, and performs other needful services which save the physician's time. Further, her presence tends to protect him from evil-speaking or from designing women. She should not be present during the preliminary interview between the physician and his patient, but should be called into the office for the examination only.

While on the subject of office advice, let me urge you to keep full notes of your office cases. Appearing and disappearing at shorter or longer intervals, they constitute a floating practice, which cannot be intelligently followed unless some record is kept of its history and treatment. A few notes of this kind will be found of the greatest value, not only for prompting the memory, but for saving one's time. I could not, indeed, get along without them. Such a case-book should, of course, have an index for the names of one's patients; but, in addition to this, it is of great advantage to keep a separate index referring only to the disease. In this way the data furnished by the case-book can, at short notice, be made available for ready reference or for scientific work.

LESSON II.

MODES OF EXAMINATION.

DIGITAL EXAMINATION BY THE VAGINA.

IN making a first examination, place the woman on her back, with her limbs drawn up, and bring her nates to the very edge of the gynecological table. If a bed at a patient's house be used, the woman's feet may either be supported by two chairs, or they may rest upon the side-piece of the bedstead. In the latter case, shoes with heels to them will prevent the feet from slipping off. Cover her with a sheet, and raise up her dress and underskirts over her knees. Having smeared the index and middle fingers of the left hand with vaseline or with any other lubricating substance, of which soap is the handiest and the cleanest, direct the index finger towards the perineum. When reached, glide the fingers upwards on the raphé until an entrance to the vagina is gained. By proceeding in this way, from below upward, the upper and more sensitive portions of the vulva are not touched. Taking note whether the parts are hot and dry, or cool and moist, the finger keeps in contact with the hind wall of the vagina up to its roof. There the cervix will be found, and an examination must now be made of its condition. Is it of natural size and smoothness? Is it enlarged, or is it soft or hard? Is the os small, or does it gape and give tokens of having been torn? The natural length of the vagina is about that of the forefinger, and if it be much shorter, the womb must have descended. Poise the cervix on the tip of the finger, and estimate the weight and the mobility of the womb. Next sweep the finger around the cervix, and examine the whole vaginal roof carefully for the fundus of a flexed womb, for a tumor, or for any other unnatural condition. Since the

natural condition of the parts is that of anteflexion, pregnancy being excluded, the body of the womb cannot be felt by the finger behind the cervix; but it usually can be reached by pressure made in front through the walls of the bladder.

Abdominal palpation with the free (right) hand will add very much to the information gained by the left hand, for by raising and depressing the womb alternately from above and below, one can make it play between the two hands. In this manner its bulk can be estimated, and very often its whole surface outlined. By catching the womb between the two hands you can get a still better idea of its mobility and of its tenderness. We can also discover plastic deposits in the broad ligaments, any marked enlargement of the ovaries and the presence of fibroid tumors. This is called Conjoined Manipulation or Bimanual Palpation, and is one of the most valuable aids to diagnosis.

In carrying out such an investigation, it is essential that the abdominal walls should be flaccid. To gain this relaxation in a nervous person, the physician should cause his patient to look up to the ceiling, so that she may not watch his movements, while he distracts her attention by conversation. Advantage is also taken of every expiration to sink the hand deeper and deeper into the pelvis, until the fundus of the womb can be outlined, or until the external fingers can feel those in the vagina. To get the needed information in fat or in nervous women, ether will often be needed. But without an anæsthetic, and without actually feeling the womb, the educated hand can often recognize the uterine impulse conveyed to the abdominal wall by the finger in the vagina; and obtain valuable information as to the position, size and condition of the womb. The scope of conjoined manipulation can be extended by using the uterine sound instead of the finger to raise the womb up.

DIGITAL EXAMINATION BY THE RECTUM.

Since the roof of the vagina restricts the range of the fingers, the rectum offers a means of making a far higher and

a far wider exploration of the pelvic cavity. Hence in all cases of doubtful diagnosis, this mode of examination should not be forgotten. By it, fissures and piles will be discovered, and the nature of post-uterine growths or of pelvic effusions and deposits made out. Conjoined with supra-pubic palpation, it gives very precise information about the condition of all the pelvic organs and structures. To map out the parts correctly it will often be well to pass the thumb into the vagina, while the rectum is being explored by the forefinger. This will show the position of the cervix and make it the point of departure. In virgins the rectal touch may often advantageously take the place of an examination per vaginam. The finger will more readily overcome the resistance of the sphincter ani, and give less annoyance, if the patient will at the same time bear down.

Still more can be learned by a plan which I have for many years pursued. The cervix is either caught by a small volsella forceps, or hooked by the uterine tenaculum. It is then gently drawn down towards the vulva, while the operator, with one or with two fingers in the rectum, explores the whole posterior surface of the womb, and its appendages.

Another excellent mode of investigation is Hegar's. The thumb first enters the vagina and rests on the anterior portion of the cervix uteri. Next, the forefinger passes up the rectum as far as the posterior surface of the womb. The free hand then presses the abdomen down towards the sacrum, so that the womb can be caught between the fingers of both hands.

A still wider range of exploration can be gained by the introduction into the rectum of the four fingers, or even of the whole hand, as advocated by the late Prof. Simon, of Heidelberg. This last heroic mode of examination is not without its drawbacks, for fecal incontinence has resulted from the over-stretching, and a number of fatal cases of rupture of the bowel have already been reported, although this means of diagnosis has not often been employed. It should, therefore, be resorted to only as an extreme measure for an extreme

case. Simon claimed that by it he could reach as far up as the lower end of the kidneys, and could feel and map out all intervening organs. I have not yet met with a case in which I felt warranted in resorting to this mode of investigation; but, as it is plainly of value, I shall describe the manner of performing it: After being profoundly anæsthetized, the woman is placed on a table in an exaggerated lithotomy position. The sphincter ani is next well stretched open, and its hind portion deeply nicked. The closed and well-greased hand is then slowly coaxed into the rectum. The fingers can now readily explore the pelvic cavity as far up as the promontory of the sacrum. Should a higher reach be needed, two or three fingers are gently insinuated into the sigmoid flexure, which, being very movable, can be pushed up as far as the navel.

In the examination of virgins, in order to save the hymen, and to give as little pain as possible, it is my habit to get all the information possible through the rectum. The finger in the rectum can very readily map out the post-cervical regions, and, by pressure on the cervix, can push up the womb to the right hand, which is engaged in abdominal palpation. It is indeed surprising how much knowledge can be gained through this channel.

EXAMINATION BY THE BLADDER.

Sometimes when the diagnosis of a pelvic disorder is obscured, additional information will come from an exploration of the bladder through the urethra, either with the sound or with the finger. For instance, a congenital absence of the womb or its inversion can be learned by making the tip of a uterine sound, passed into the bladder, approach the index finger in the rectum. Or, small tumors of the womb, abscesses of the broad ligament, or congested ovaries, can be made out by means of the finger introduced into the bladder itself. The method by which this is accomplished, I shall describe in a lesson upon diseases of the bladder, under the heading of dilatation of the urethra.

EXAMINATION BY THE UTERINE SOUND.

The uterine sound is nothing more than an enlarged surgeon's probe. It is a pliable copper staff, tipped with a small bulb, and graduated by notches at intervals of an inch. These notches should be shallow, else the sound will snap at one of them. It should, further, consist of one piece, else by the wearing away of the thread of the uniting screw, the relation between the handle and the tip is lost. The ordinary inside length of the womb is 2.5 inches, and, therefore, at that distance from the tip of the sound, a small knob or shoulder is raised, which can be felt by the examining finger. This is the only sound I use; all others have been discarded by me long ago.

The sound should never be introduced until the physician has first satisfied himself that the womb is not gravid; and this golden rule holds good for all uterine applications. I lay stress on this point, for I once carelessly brought on an abortion in an estimable married lady, who was quite as much surprised at the result, but not quite so much mortified, as I was. Again, I have on more than one occasion been consulted for uterine disease by designing women, who, being pregnant, sought advice with the hope of having a cheap riddance induced by the treatment. Once, after arranging to meet a physician who lived some twenty miles off, I received a countermanding telegram, followed by a letter explaining that the supposed uterine disease of his patient, a reputable married woman, was pregnancy, and that her sole object was the hope of having an abortion provoked by the examination. His suspicions had been aroused by mine, and by working on the fears of his patient, he extorted a confession. These facts should lead one to be on one's guard, and a good off-hand rule to remember is this: When the cervix is as soft as one's lips, the woman is probably pregnant; when it is as hard as the tip of one's nose, the womb is most likely empty.

By the sound we ascertain not only the length, the position, the sensitiveness, the mobility, and the general condition of the womb, but also the angulation and the permeability of its

canal. The utmost gentleness should direct the introduction of this instrument, for, blunt as it is, many times has its tip perforated the wall of the womb, and been felt beneath the abdominal wall. Liebmann, who has made a study of the subject,* finds that the danger is greatest shortly after a labor or a miscarriage, at which time the womb is softened by fatty degeneration. Very fortunately this accident has rarely been followed by severe symptoms.

Sometimes the sound misleads by entering an oviduct, and by thus giving a long measurement; but this rarely happens—so rarely that I have never wittingly met with such a case. There are two modes of introducing the sound, the one by touch without the speculum, the other by sight through a speculum. The former is the far better way, for then the womb is caught *in situ*, and its position accurately determined; whereas, when the speculum is introduced, the pressure which its divergent blades make upon opposite walls of the vagina, often changes the position of the womb, so much so as sometimes to change a retroversion into an anteversion. The sound often meets with a hitch at the internal os uteri, but this will be overcome in the great majority of cases by steady pressure, and by holding the cervix firm with the hook of a uterine tenaculum.

In anteflexions the introduction of the sound can be greatly facilitated by resorting to the same kind of manœuvre as the one often used in the introduction of the silver catheter in the male, and called by the French *tour de maître*, or the master-stroke. The sound is passed in with the handle hanging down, and with the beak looking backwards and downwards—viz.: towards the woman's coccyx—as if the womb were retroflexed. When the bend in the cervix is reached, and the sound cannot advance further, the handle is turned half a circle with a wide sweep, and depressed. During this reversal of position, the beak readily clears the hitch at the internal os.

* *Archives de Tocologie*, Decembre, 1878, et Janvier, Septembre et Octobre, 1879.

Pain is usually complained of as the tip of the sound passes the os internum, and especially when it touches the fundus of the womb. Sometimes in endometritis this pain is excessive, as much so as when a probe touches an exposed dental nerve, and it has set up even a fatal inflammation. The sound should, therefore, be grasped like a pen, very lightly with the thumb and fingers, and it should always be introduced slowly and gently. Nor should it ever be introduced without a distinct purpose. Most cases, indeed, do not need the sound at all.

THE SPECULUM.

By the speculum we are enabled to inspect the vagina and the cervix of the womb, and to make applications more readily and more thoroughly. It is, however, an instrument more valuable for the treatment of a uterine disease, than for its diagnosis.

Many speculums have been devised, but in most cases I prefer my own base-expanding one, which many of you have used in your instruction by the bedside, and can bear witness to its efficiency. The bivalve speculum is preferably introduced, with the woman in the dorsal position. The labia are separated by two fingers which are passed just within the vulva. The bevelled tip of the speculum is then pressed downward on the edge of the perineum, and guided in through the interval between them, towards that portion of the vagina where the cervix has previously been found to lie. The handles being next turned towards the left thigh, the blades are then opened, and, as soon as the os comes into view, are fixed by the the screw on each side. Should more space or working room be needed, the large screw at the end of the handles will still further open the blades.

At first blush the four-inch blades of my speculum (Figs. 3 and 4), may seem too short—those of my favorite one measure a scant three and a half inches. But practically, if their tips be directed to the previously ascertained site of the cervix, it will be found that, when widely separated, they will so stretch the uterine end of the vagina, as to bring down the cervix

into the field of vision, not only very close to the eye of the physician, but within reach of his index finger. For diagnostic or for operative purposes, these are advantages not to be overlooked. In very rare cases, such as of a fat woman, whose vagina is large and flabby, or of one in whom, by a fibroid or an ovarian tumor, or by pregnancy, the womb is lifted up above its accustomed site, the cervix may not be

FIG. 3.

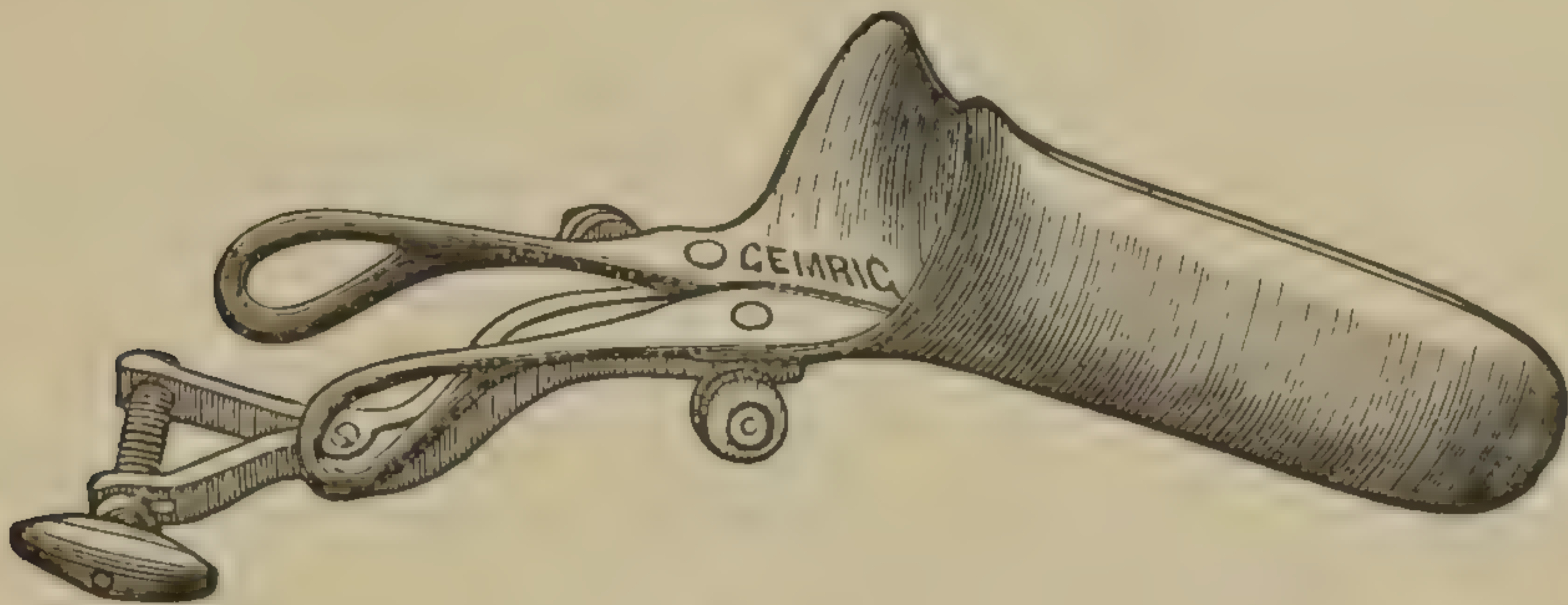
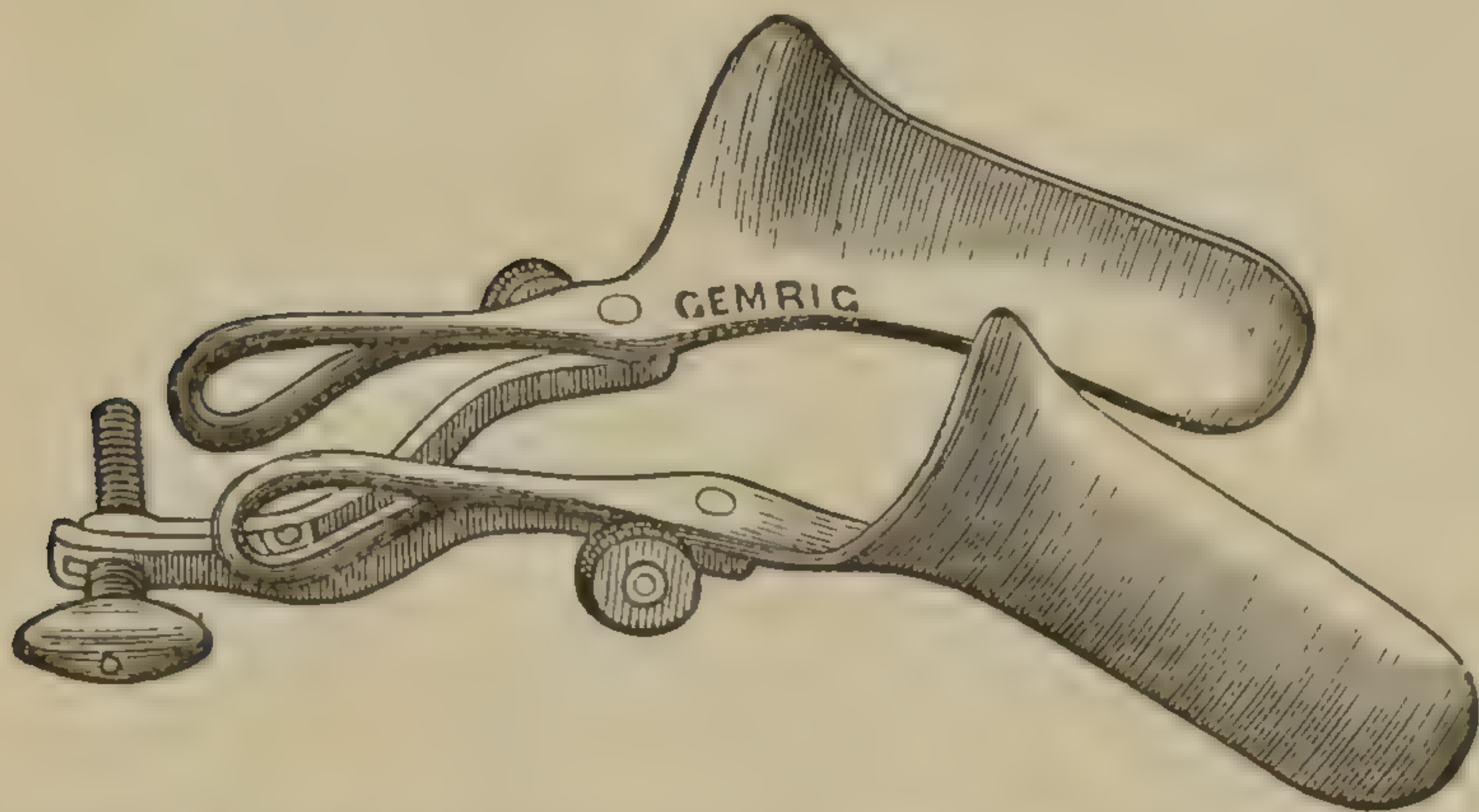


FIG. 4.



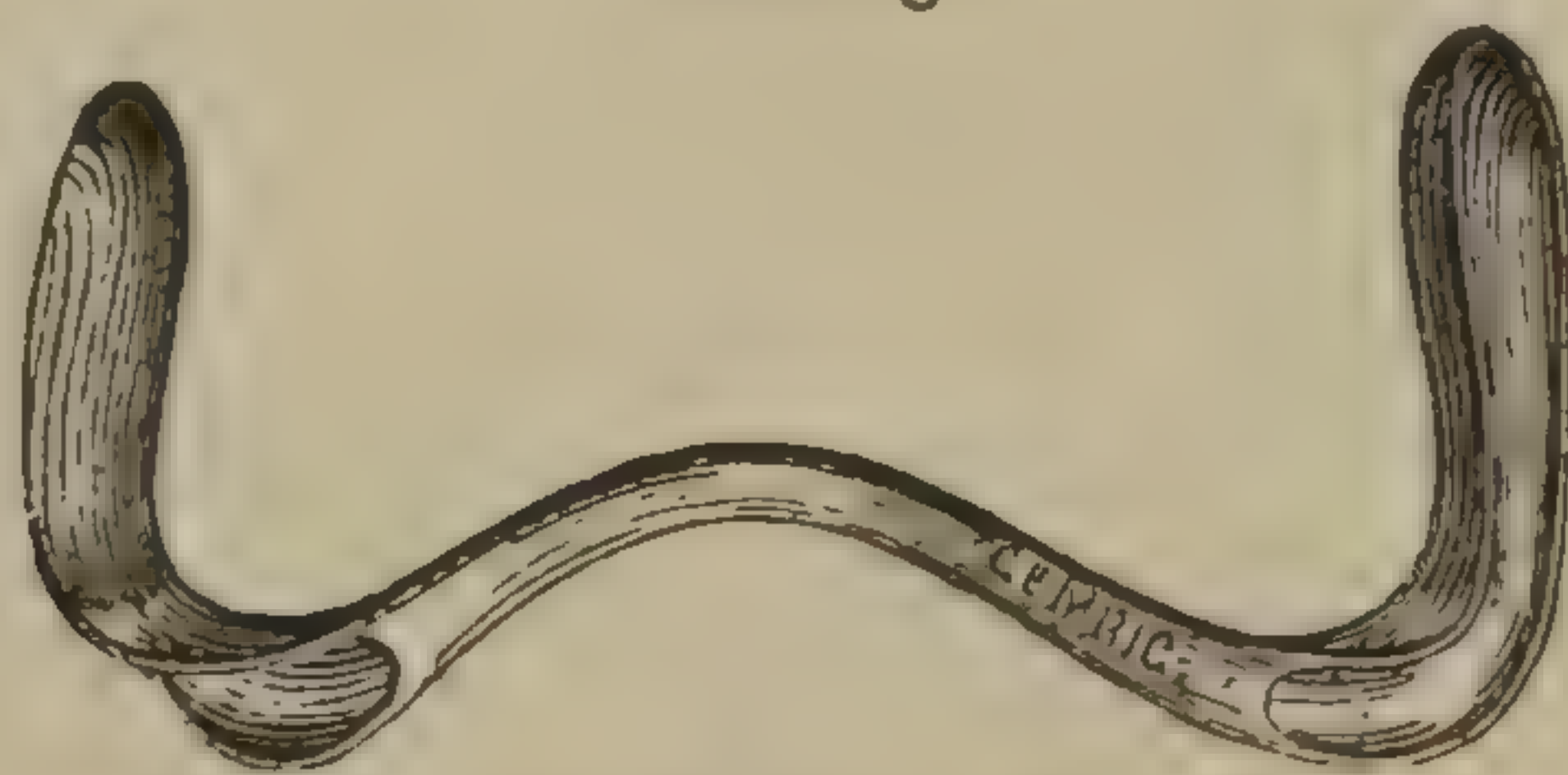
well exposed by this instrument. In these very exceptional cases the duck-bill may be used, or the larger of the Ferguson speculums may be substituted for the bivalve. The smaller glass speculum is put down in the list because it will occasionally be found useful in the examination of unmarried women, or those in whom the introitus vaginæ is either unnaturally small or spasmodically contracted. Yet even in these cases, after the slow admission of one, and then of two fingers, the parts can usually be sufficiently dilated for the admission of the bivalve speculum. Under ether this can always be done.

I feel quite sure that physicians who have once used this speculum, with the woman lying on her back, will never wish to return to their old-fashioned cylindrical or quadrivalve speculums. One hint, however, to those of you who do not feel disposed to give up your long-used glass speculums for a new and an untried instrument. The Fergusson speculum, as sold in the shops, is wholly too long and too narrow. For exceptional cases it is well to have on hand the two sizes above given; but the best working speculum of this kind is, in my experience, one not over five inches in length, and with the smaller aperture not under one inch and one-eighth in diameter.

From its mirrored sides, this glass speculum possesses the great advantage of throwing more light on the cervix than does any other speculum, and for that reason is excellent for the examination and treatment of patients at their own homes, which are often dark. On the other hand, from its length and narrowness, and from the distortion of the parts which it causes, it is the very worst speculum possible for diagnostic purposes, and has probably done more to retard the advance of gynecology than any other cause. When, however, by the bivalve or the duck-bill speculum, a diagnosis has been made, the largest and shortest possible glass one will occasionally be found a convenience, sometimes a necessity, when strong acids are applied to the cervix.

For operative or for diagnostic purposes, no speculum can compare with Sims's duck-bill (Fig 5). When it is used the

FIG. 5.

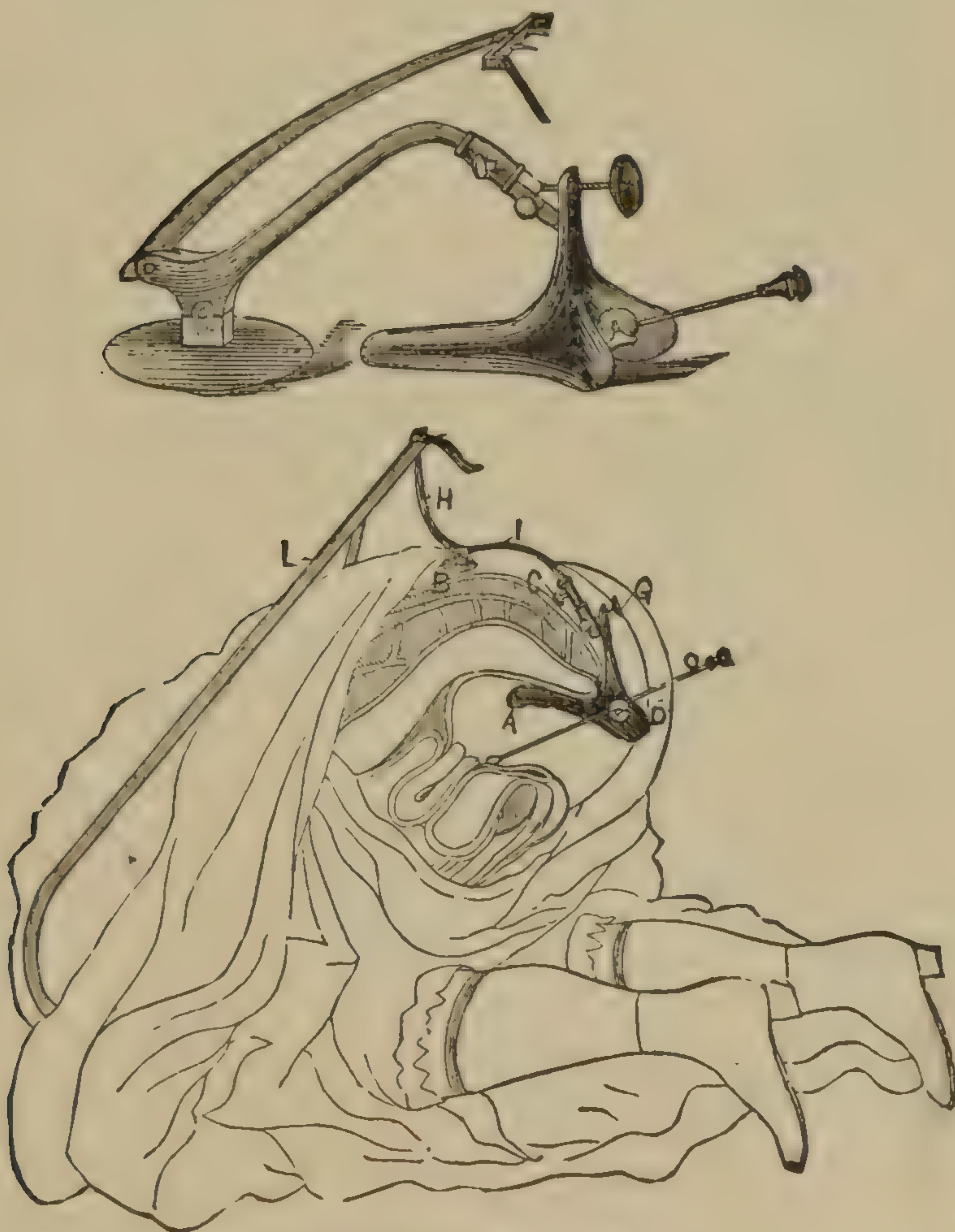


SIMS'S DUCK-BILL SPECULUM.

woman should ordinarily lie in Sims's left-lateral, semi-prone posture—that is to say, on her left side, with her left arm behind her back, the chest as low as possible, the knees drawn

up, the right a little higher than the left, and the nates brought down to the edge of the table, or to the side of the bed. When the woman lies in this position, a reversal of gravity takes place in the abdominal viscera, and they tend to fall away from and out of the pelvis. If now the speculum be introduced, air rushes into the vagina, and so fully distends it, that the vaginal walls do not collapse or bulge over the sides of the blade. The drawback to its use consists in the need of having an attendant to hold the blade *in situ*. True, self-retaining duck-bill speculums are sold in every instrument-shop, but not one of them, in my opinion, is worth

FIG. 6.



ERICH'S SPECULUM.

having, with the exception of that devised by the late Dr. A. F. Erich, of Baltimore (Fig. 6). The simple and ingenious

mechanism of this instrument dispenses with the need of an assistant, but at the same time so much time is lost in its adjustment that ordinarily the unattended physician will fall back on his bivalve. Dr. Erich, who kindly supplied me with the cut of his instrument, thus describes the mode of introduction:

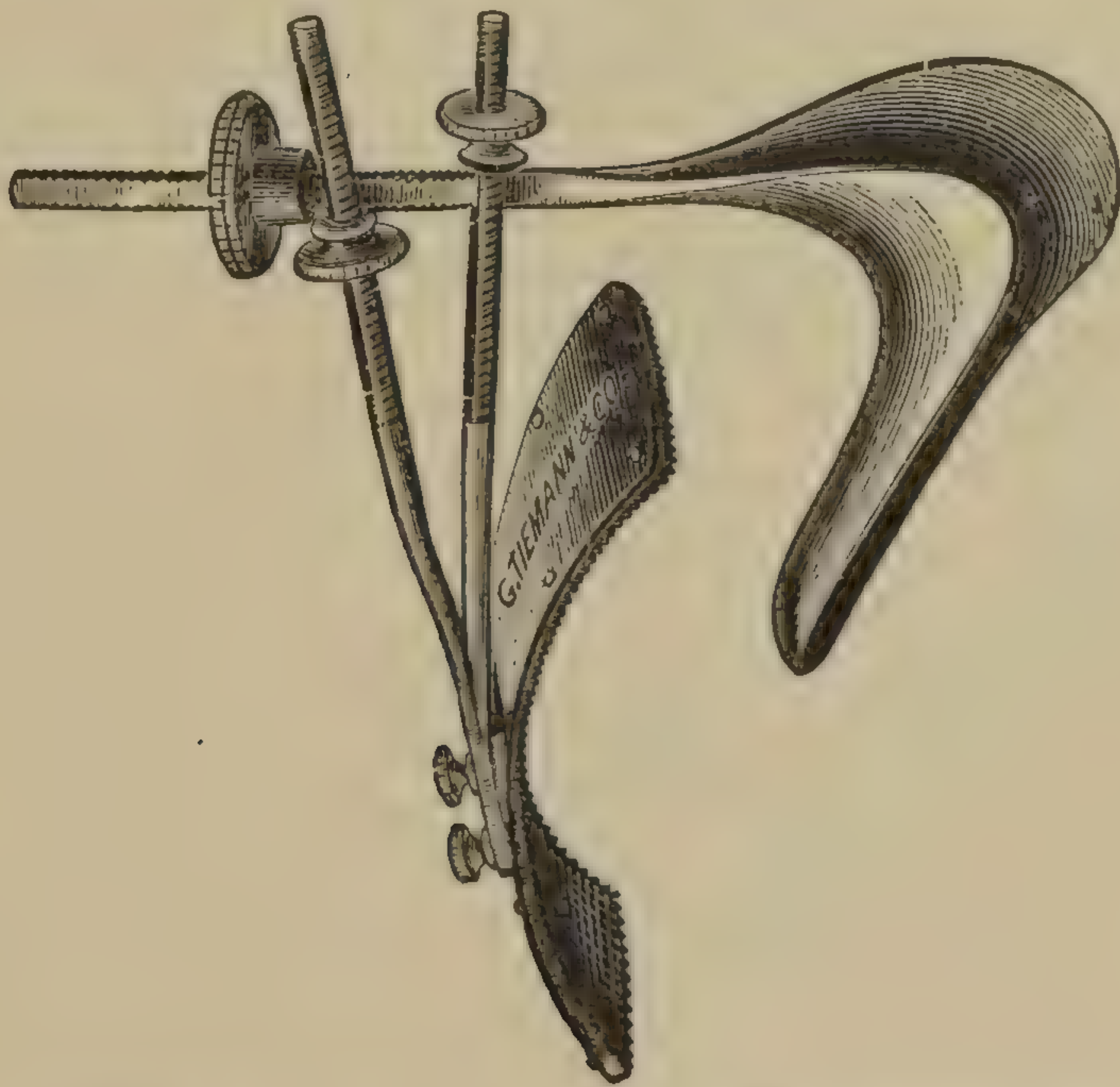
“It is most conveniently used in Sims’s left-lateral semi-prone position. The second wood-cut represents it as used with the patient upon her knees, this being the best position to show all the parts of the instrument in the illustration. This position is, however, rarely assumed in practice, as it is more fatiguing to the patient and less convenient to the operator. It exposes the interior of the vagina, upon the same principles as Sims’s speculum, by retracting the perineum; the distension of the vaginal cavity being secured by placing the patient in such a posture as will cause the pelvic organs to gravitate from the retractor.

“Before the speculum is applied, the patient ought to loosen such portions of her dress as may compress her abdomen, then put her head and right arm through the loop of the strap belonging to the speculum.

“Now oil the duck-bill retractor A, and introduce it upon the index finger of the right hand, carrying it along the posterior wall of the vagina as far back as possible, then press its tip with the finger in the vagina towards the sacrum as far as the parts will yield to gentle pressure, and use the screw G to secure it in the position thus attained. Then place the fulcrum plate B over the centre of the sacrum, and draw upon the lever H until the perineum is sufficiently retracted, and fix it in that position by attaching the strap L to the hooks at the upper end of the lever. The little guard plate shown in the wood-cut, is intended to cover the steel hooks when the instrument is not in use, to protect the fingers of the operator against accidental contact with them. Should there be lateral version of the uterus, the instrument can be adjusted to any lateral angle by the screw C. By means of this screw also the retractor may be detached, and others of different sizes secured to the levers. The uterus may be fixed

in any desired position by tightening the screw D of the adjustable depressor O. It has a sliding as well as a rotary motion, and can be detached from the speculum by a few turns of the same screw in the opposite direction, and may then be used with the hand as an ordinary depressor. Should the posterior wall of the vagina be shorter than usual, it may become necessary to loosen the screw G, by a turn or two, to allow the cervix to come forward into the field of vision. If the speculum has not been inserted deep enough into the vagina, the posterior wall will prolapse in front of the cervix. The strap ought then to be detached, the screw O to be loosened, and the speculum to be pushed up far enough to get its tip behind the cervix. While the use of the depressor is only occasionally required in the knee position, it is generally required in the lateral position, to bring the cervix into view by gentle traction made with it upon the anterior wall of the vagina."

FIG. 7.



DARROW'S SELF-RETAINING SIMS'S SPECULUM.

Another very excellent self-retaining duck-bill speculum is the one devised by Dr. C. E. Darrow, of Rochester, N. Y., and made by Geo. Tiemann & Co., of New York City (Fig. 7.)

I have repeatedly tried it, and have found that it answers very well; but, of course, an ordinary duck-bill, held by the human hand is always superior to every substitute.

“This speculum is an ordinary Sims’s with the Mundé flange; while the handle is flattened on two sides, and has a rapid screw cut upon it.

“The saddle is made of a sheet of brass, lined with corrugated soft rubber. The brass is firm enough to retain any curve which has been given to it; yet sufficiently flexible to be bent with the hands, so as to accommodate it to the peculiarities of any patient. The corrugated rubber gives the saddle a firm hold upon the skin; and, at the same time, relieves the patient from all sense of unpleasant pressure.

“Upon the back of the saddle are two parallel bars, each provided with a slot and a thumb-screw. These bars are secured to the saddle by two more thumb-screws.

“The speculum is introduced exactly as the ordinary Sims’. The saddle is applied to the sacrum, so that its lower edge is just above the tip of the coccyx. The handle of the speculum is then passed through the slots in the parallel bars, and the thumb-screw upon the outer bar is turned outwards to meet the handle of the speculum (at such a position in the slot as it naturally takes).

“Then the large thumb-screw is applied to the bar of the speculum, and by its turns the perineum is retracted to any desired degree.

“When this has been done, the thumb-screw on the inner of the bars is screwed down to meet the handle of the instrument, and the adjustment is complete.

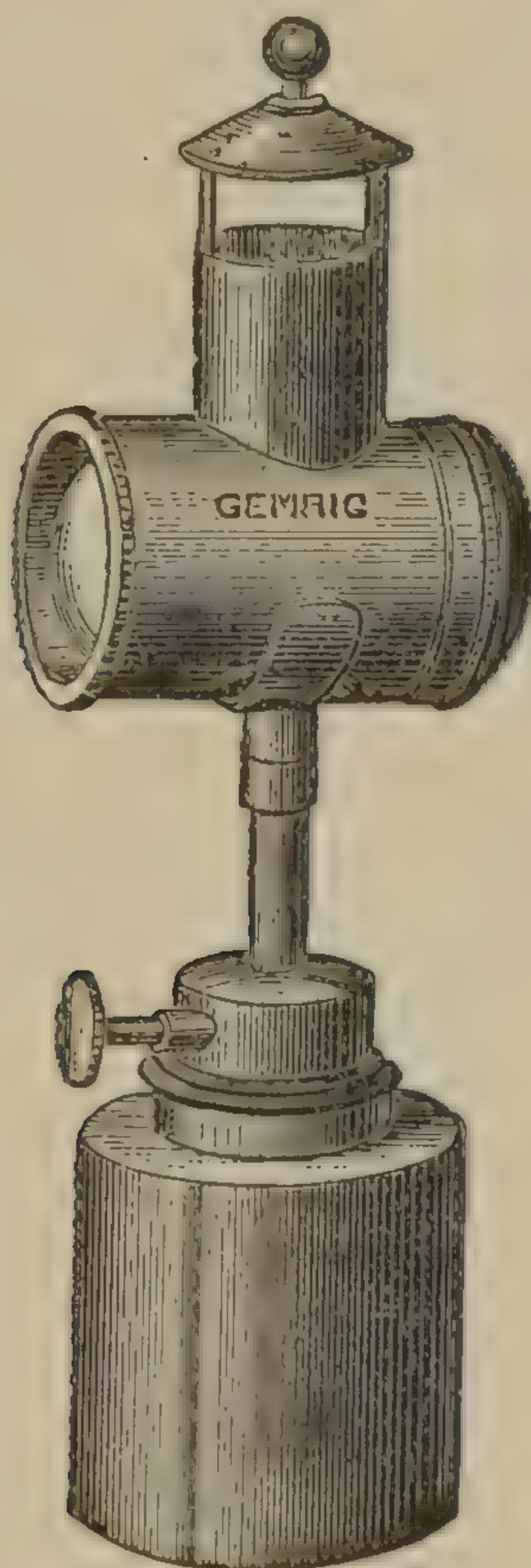
“If it is desired to tilt the tip of the speculum further into the hollow of the sacrum, this may be accomplished by changing the relative positions of the screws upon the bars; or the whole speculum may be carried upward by loosening one of the thumb-screws on the saddle, then raising parallel bars and speculum, until the thumb-screw reaches the higher socket upon the saddle.

“The work of the hand of an assistant, raising the superior

buttock of the patient, is done by the Mundé flange; the holding of the speculum is accomplished by the saddle."

For illuminating the parts when a speculum is used, daylight is of course the best, the light coming horizontally from a window starting from the same plane as the one on which the woman's body lies. If direct daylight cannot be obtained, good reflected light can be got from a concave mirror worn on the operator's forehead, or from a larger one with a central aperture and mounted on a handle. At night an excellent light can be thrown on the parts by Colin's Illuminating Lamp (Fig. 8), which is small enough to be carried in one's pocket.

FIG. 8.



COLIN'S ILLUMINATING LAMP.

At a pinch, an excellent off-hand reflector can be made by tying a silver tablespoon to a wax candle, with the cavity of the bowl looking towards the flame.

VISUAL INSPECTION.

It is often needful for the eye to inspect the external genital organs; but, as this mode of examination is naturally revolting to the feelings of a modest woman, it is wise not to propose it or to insist on it. It can, however, very generally be made without the direct knowledge of the woman, while the speculum is being used, and especially directly after its withdrawal. Then, should the woman discover what is being done, the preliminary digital examination and the use of the speculum have already blunted the edge of the shock to her modesty.

LESSON III.

CARUNCLE AND OTHER AFFECTIONS OF THE FEMALE URETHRA.

CARUNCLE.

THE female urethra, from its shortness, elasticity, and large bore, is very rarely narrowed by strictures. But it is liable to a class of disorders from which the male urethral canal is almost wholly exempt. The most common and the most painful of these is the one I show you in the person of this woman.

She is forty-three years old, but constant suffering has made her look much older. In fact, from her great emaciation, care-worn expression, and general cachectic appearance, one might readily suppose her to be the victim of some grave constitutional disease. Her history, in brief, is as follows: Four years ago, while in perfect health, her urine began to scald her. The pain, at first bearable, daily grew worse, until it now is so acute that she holds her water as long as possible, and when passing it clutches the bed-post in her agony. The act of voiding the last few drops gives her the most suffering. Before long, cohabitation became painful; but, with that submissive affection which characterizes many a wife, she yielded to her husband's wishes until coitus could no longer be borne. For several months she has ceased to have intercourse with him. This is, of course, a source of domestic unhappiness. Unless she stoops and widely straddles her legs, walking is attended with much pain. She complains of a constant heat and throbbing in the external organs of generation, has more or less leucorrhœa, and finds her linen often stained with blood and her urine streaked with it. By brooding over her sufferings and over her in-

complete conjugal relations, she has come into a very morbid state of mind. Now, most of these symptoms are characteristic of some utero-vaginal affection, and the physicians whom she has consulted have been so misled as to direct their attention to the womb and vagina. Applications have been made to the cervix uteri, which, by the way, is torn and somewhat eroded; vaginal suppositories have been used, and even a pessary has been introduced. What has served still further to lead them astray, is a marked sympathetic or reflex pain in the left ovarian region, which is almost always pathognomonic of uterine disease. I ought to do them the further justice to add that they saw her before her sufferings had become as acute as they are at present. Nor can I afford to be uncharitable, for I myself have made the same blunder.

As I separate her thighs and expose the meatus urinarius, those of you on the lower benches can see, peeping out of it, a small crimson and wart-like body. It is called urethral caruncle, vascular tumor, and vascular excrescence of the urethra; but we won't trouble ourselves much about names. What we wish to know is how to cure the disease. I hook up the base of the growth with a tenaculum, and by very gentle traction bring it wholly to view. It now looks like a small Antwerp raspberry, and shows a broad base of attachment just within the lower verge of the meatus. Insignificant in size as this little growth is, it has embittered this woman's life for the past four years. Notice its vascularity: it bleeds on the slightest touch. Remark also its extreme sensitiveness: although profoundly anæsthetized, the woman winces and draws up her limbs. So exquisitely alert are the little nervelets distributed over its surface, that were she not under the influence of ether, she would writhe under the brush even of a feather. Let me here remark that the vulva and outlying reproductive organs of a woman are the last to yield to the influence of an anæsthetic. Sensation is here so acute, that it will remain long after other peripheral nerves have become benumbed. Thus, in the attempt to pass the hand into the vagina for the purpose of performing version, or to

introduce a speculum in cases of vaginismus, or to press upon the tender cicatrix of a torn perineum with the duck-bill speculum, although the woman may be breathing stertorously and her conjunctivæ may be without feeling, she will often so resist as to need a fresh instalment of ether. I mention this fact not only for your future guidance, but also as a partial explanation of her acute sufferings.

You must not infer that every case of caruncle presents symptoms as exacting as these. In the majority of cases there is no constitutional implication, and the woman complains merely of discomfort or of pain during the acts of micturition and of coition. But, on the other hand, worse cases will be met with—cases in which, by loss of rest, constant suffering and endless brooding, insanity has been induced. Some women have even been goaded by their anguish into committing suicide. Last autumn I saw a young married lady who was broken down in mind and body by her sufferings. She was peevish, morose and melancholic, and had dysmenorrhœa and every imaginable ache. Coitus had not been indulged in for months, and she had taken to her bed. Neither her medical attendant nor myself could believe that the presence of a urethral caruncle satisfactorily accounted for pale lips, hollow cheeks, sunken eyes, and for her grave mental and physical manifestations. I sounded her heart and lungs, investigated the condition of her abdominal organs, examined the cervix uteri for a cancer, and finally, I am ashamed to confess, straightened out a somewhat anteflexed womb. Yet, after we removed the caruncle, she became another woman. As if by magic, all her pains and aches, even her dysmenorrhœa, left her. She got out of bed, gained rapidly in flesh, is now an active housekeeper, and, what is more rare, a very grateful patient.

These torturing growths are more common to the married than to the single, and are usually found in women who have passed the prime of life. I am inclined to think that they generally owe their existence to the congestion of the urethral plexus of veins—such, for instance, as is induced by the

pressure of the gravid or the displaced womb, or by that of an over-distended bladder or of a loaded rectum. In fact, pretty much the same causes are at work which tend to produce piles. Habits of uncleanness may also generate them, and so may any irritating leucorrhœal discharge. Gonorrhœa is likewise said to be a cause, but I have not seen an example in which they could be traced to this disease. They consist of hypertrophied papillæ covered with a layer of tessellated epithelium, and are largely supplied with nerves and blood-vessels. They may be single or multiple, sessile or stalked, pink or scarlet, and are usually found on the lower verge of the meatus. I have, however, seen them stud the whole circumference of this opening, and occasionally have found them extending up the canal for a distance of half an inch or more. In size they range from a pin's head to that of a pigeon's egg, but I have never met with one larger than a small raspberry. The suffering caused by them bears no relation whatever to their size. Very small ones may give rise to intolerable anguish, while a large one may produce merely a sense of discomfort. The more vascular and vivid in color, the more sensitive do they seem to be. Some authors describe a pale, non-vascular, but exquisitely sensitive tumor of the urethra, which appears to be neuromatous in character. This I have never met with. I have, however, repeatedly removed from unmarried girls a worm-like growth, which dangled from the vestibule. It was pale in color, but seemed to give no discomfort.

Since most of the lesions of the reproductive apparatus, such as vaginitis, uterine displacements, etc., give rise to vesical disturbance, and since the symptoms are not always so typical as in the case before us, a urethral caruncle is very likely to be overlooked by the physician. Reflex symptoms, uterine in their expression, will also tend to lead him astray; while a very natural delicacy prevents him from making the needful visual inspection of the parts. Early in my practice a mortifying blunder of this sort taught me to make it a rule always to inspect the urethral opening whenever dysuria is

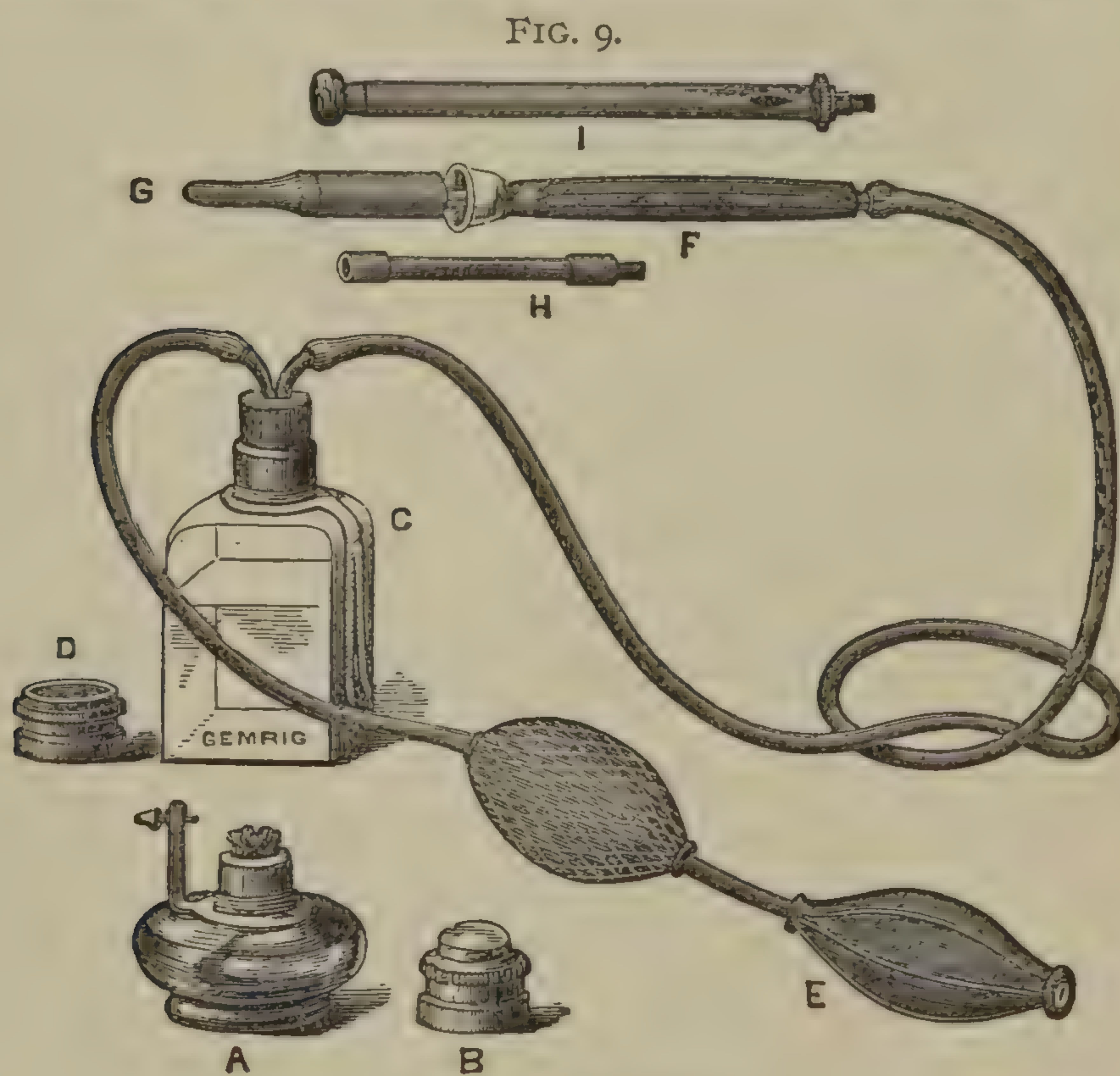
complained of. But woman's modest nature—nor would we have it otherwise—instinctively resents such an examination. If brusquely proposed, it will almost always be denied. How then is it to be effected? Let me here give you a hint worth knowing: Never suggest to a woman the necessity for making an ocular inspection of her person, but do it without consulting her. Let us suppose that you are called in to a case in which dysuria is a prominent symptom. You will very naturally infer the existence of some uterine lesion, and will, of course, ask for an examination with the speculum, to which most women will submit. While exploring the uterus with the index finger, you may with the thumb gently press upon the meatus, and notice whether the contact elicits pain. During the introduction or the withdrawal of the speculum, you can always visually inspect the parts without the knowledge of the woman. Now, in my experience, whenever you can confidently say to your patient: "I have discovered the cause of your trouble; here it is," and then by digital pressure upon the caruncle can convince her of the correctness of your statement, she will offer no resistance to any future needful exposure of her person. Under all circumstances, however, you must not forget to go through with the formality of covering her with a sheet; for just as you gild and sugar-coat what is bitter to the taste, so must you gild and sugar-coat what is bitter to the mind.

What is the prognosis of this affection? Very good, when the caruncle dangles from the meatus by a slender stalk. Guarded, when it is sessile or when it is multiple, and especially so when it extends up the canal. Like the heads of the fabled hydra—whenever a sessile caruncle is removed, one or more are very likely to spring up from its stump. Yet even then a cure is usually attainable; while at their worst, as I shall presently show you, their growth can be restrained and the woman made comfortable.

Now comes the final question: What are our resources for the cure of this affection? When a caruncle is distinctly pedunculated, one snip of the scissors is all that is needful

for a cure. But when sessile, as it usually is, difficulties arise in the way of its removal which demand the administration of ether and the aid of two assistants.

Let us now illustrate this on our patient. She lies in the lithotomy-position, fronting a good light, and with her knees supported by these gentlemen, who also place their fingers on each side of the meatus and stretch it open. I now hook up the base of the growth with a uterine tenaculum, and snip it off by repeated clips of a pair of curved scissors. I take care to include also a portion of the surrounding healthy mucous membrane. To prevent its otherwise pretty sure return, I quickly dry the raw surface and sear it with this very ingenious and invaluable instrument invented by M. Paquelin, a Frenchman, who calls it a Thermo-cautery. (Fig. 9.)



THERMO-CAUTERY.

It consists of the double steel tubes G and I, ending in a hollow platinum tip, into which, through a flexible tube-attachment to the bottle C, the vapor of benzoline is forced

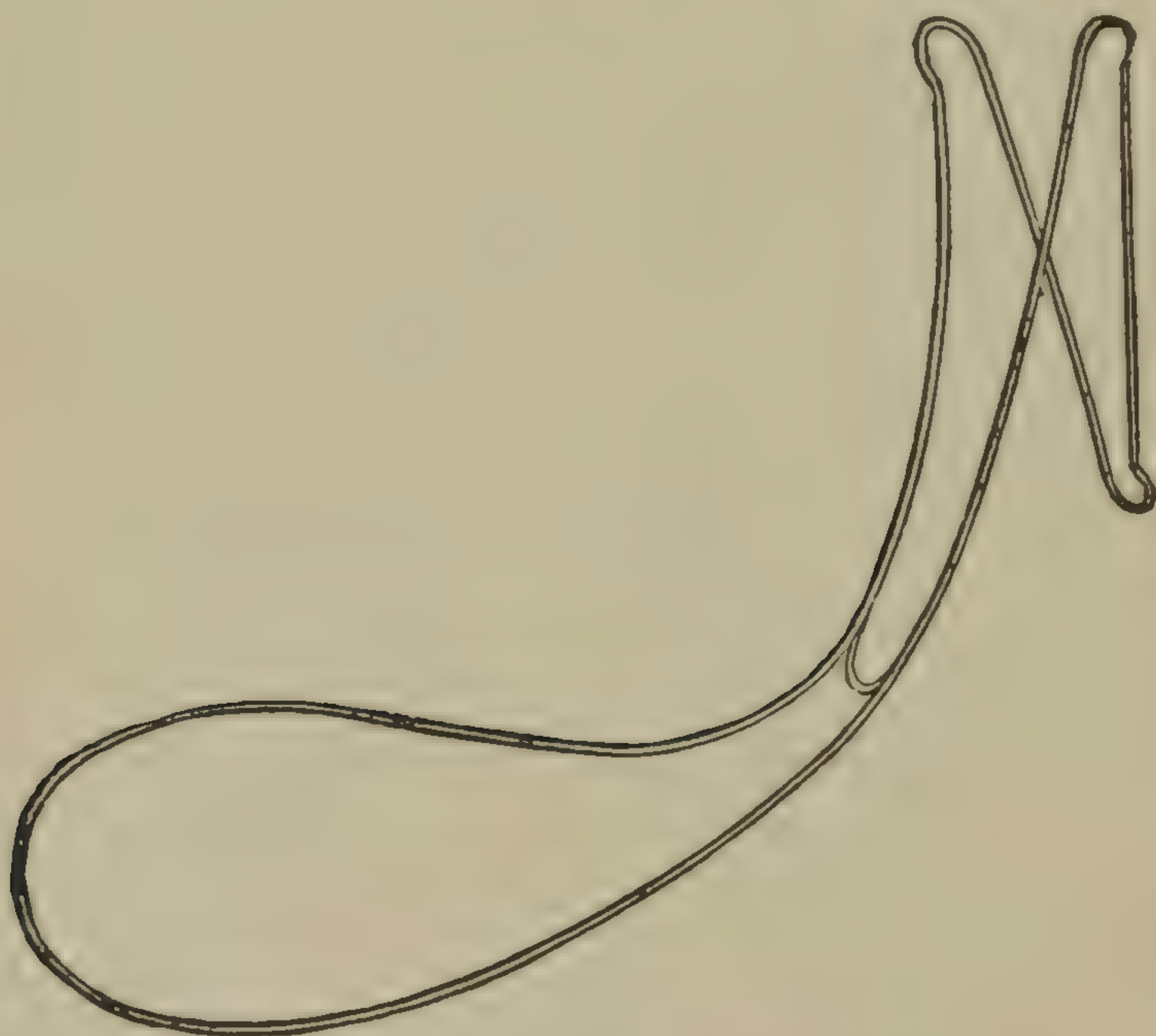
by working the rubber spray-bellows E. When once the platinum tip of one of these tubes is heated red-hot in the alcohol lamp A, it never cools so long as the spray-bellows is worked. I plunge it into this glass of cold water, and, although it comes out black and apparently quenched, I am able at once, as you see, to make it glow again.

Formerly I used to sear the raw surface of the wound with the frayed end of a match dipped into fuming nitric acid. This is a good plan, but it does not always stay the hemorrhage, which is sometimes quite free. For instance, I once removed, for the second time, a cluster of sessile growths, and found at my next visit, twelve hours afterwards, that the lady had lost and was losing too much blood. I staunched the bleeding point with ice and Monsel's solution, and put on a compress with a T-bandage; but at my next visit, six hours later, I found her quite blanched from a recurrence of the hemorrhage. I now ineffectually applied the solid stick of lunar caustic, and then tried to nip the bleeding point with a *serre-fine*, or artery clip, but the tenderness of the part was so great that she would not permit any further interference; nor would she again inhale an anæsthetic. For a moment I was at my wits' end to know what to do. The prospect of spending an hour or two at her bedside with my finger pressing on the urethra through the vagina, was not an agreeable one. But I finally succeeded by stuffing a sponge half-way into the vulvar opening. Its elasticity, and that of the perineum on which it rested, made the needful pressure upon the bleeding surface.

For avoiding the troublesome complication of hemorrhage, and also for ensuring the complete destruction of the growth, the actual cautery is undoubtedly the best agent. But, since the expense will put the thermo-cautery or the galvano-caustic battery out of your reach, I should advise you to use a red-hot knitting-needle, or some one of those blunt-pointed instruments which dentists use in plugging teeth. For this purpose a spirit-lamp should be used, and not an oil or a kerosene lamp, the yellow flame of which so dazzles and

blurs the vision, that the meatus cannot be distinctly seen, when the eye is suddenly directed to it from the lamp. When the caruncle lies high up, the urethra can be very effectively stretched open by two hair-pins, each bent into a hook and held by an assistant. An admirable speculum of wire has been devised for this purpose by Dr. George F. French. (Fig. 10.)

FIG. 10.



FRENCH'S URETHRAL SPECULUM.

But it is high time to return to our patient. The after-treatment will consist of the application twice a week of undiluted carbolic acid (Calvert's No. 4), until the raw surface has skinned over. By the use of this agent I have best succeeded in preventing a crop of small growths from springing up from and around the site of the parent growth. Sometimes you will have to repeat the cutting operation, but not often, if you follow the plan of treatment I have laid down. Once, in an obstinate case, which had passed through several hands, and had stubbornly resisted repeated operations, I gained a cure by first cutting off the growth, and then forcibly dilating the urethral canal with the expanded blades of a dressing-forceps until it admitted my index finger. I

argued that by stretching the muscular coat of the urethra, I should release the involved plexus of veins from its spasmodic contraction, and thus relieve their congestion. My friend Prof. Theophilus Parvin has succeeded by excising the growths, and bringing the edges of the wound together with stitches. By this procedure the site of the caruncle is covered with healthy tissue, and the chances of its return are greatly lessened. I must, however, add that, since using the hot iron, I have not had a relapse.

But every woman will not submit to the cutting operation; what then is to be done? Whittle the end of a match to a point, and with it touch each growth twice a week with the crystals of carbolic acid made fluid by heat. This is a very painless operation, and one which you will find very effectual in mummifying the tumor and blunting its sensitiveness. So prompt, indeed, is the action of this acid as a local anæsthetic, that immediately after its use I have quietly snipped off a pedunculated caruncle without the knowledge of the woman. It is probable that a 10% solution of cocaine would be still more efficacious, and that, after its application, even sessile caruncles could be removed without an anæsthetic. For analogous conditions, Dr. A. W. Edis recommends* the use of a saturated solution of chromic acid. It should be applied in the same manner as the carbolic acid, but with more care, and should afterwards be neutralized by pledgets of lint dipped in a strong solution of sodium carbonate. In this relation let me say that during a uterine treatment you will occasionally discover a painless caruncle. If pedunculated, snip it off; but if sessile, be wary of touching it, lest its removal should cause the growth of secondary painful ones.

OTHER AFFECTIONS OF THE FEMALE URETHRA.

URETHRITIS.

There are a few other affections of the female urethra, of which I have no examples to show you, but with which you

* *British Medical Journal*, April, 1874, p. 449.

will at long intervals meet. One of them is inflammation of the urethra.

Acute Urethritis is usually specific, being very generally due to gonorrhœa; but it may come from other causes as well, such as a cold, or the pressure from the child's head in labor. So difficult is it, even with the aid of the microscope, to tell a simple inflammation of this canal from a specific urethritis, that, for such information, we shall often have to rely mainly on the history of the case. But, since the testimony of the patient herself is often, either from design or through ignorance, untrustworthy, and since that of the husband cannot be sought, one usually treats such a case without knowing the source of the disease. It is, therefore, best to consider every doubtful case as one of specific origin, and to treat it accordingly. Very fortunately, the treatment for both varieties is pretty much the same, although it should be a little more energetic in the specific variety. If an acute vaginitis precedes the attack or co-exists with it, the cause is probably specific.

The most exacting symptom is painful micturition, from the scalding of the inflamed surface by the urine. Frequent desire to pass the water is also not an infrequent symptom, but it is not so common as in cystitis. In fact some women, afflicted with inflammation of the urethra, will hold their water for a long time, in order to save themselves from the pain of frequent micturition. A digital examination will elicit pain at the meatus and along the urethra, which will feel through the anterior wall of the vagina like a cord. The meatus will be inflamed and swollen, and a purulent discharge will well out of it when downward pressure is made upon the urethra by the finger in the vagina.

The treatment at first should be antiphlogistic, such as flaxseed tea with sweet spirits of nitre, or neutral mixture containing small doses of morphia, together with warm applications to the vulva. When the brunt of the inflammation has been passed, the oil of copaiva may be given, and urethral injections of the silver nitrate, of the zinc sulphate, or of boric

acid, and the like, may be made. Of all urethral injections, I prefer a solution of the bichloride of mercury, of the strength of one part to one thousand. This is especially suitable for the gleet form of this disease.

GRANULAR EROSION OF THE URETHRA.

Whenever an inflammation of the urethra has become chronic, it is liable to degenerate into a granular erosion of the lining membrane, very analogous to that of the conjunctivæ. But in old women this affection may develop without any previous urethritis, or at least without any antecedent symptoms.

The pain in micturition is excruciating, and the whole urethral tract is tender to pressure made on it by the finger in the vagina. Upon fully stretching open the meatus, you will find the mucous surface highly congested and denuded of epithelium. This condition will usually yield to repeated applications of undiluted carbolic acid. These should be made by a uterine applicator, and to the whole of the diseased mucous membrane. The urethra should immediately afterwards be swabbed out or be injected with olive oil. This acid may be boldly applied every five days, until the local symptoms disappear. Delicate urethral suppositories of iodoform, or of boric acid, or of bismuth, will also do much good. In stubborn cases the urethra should be dilated and very strong solutions of corrosive sublimate or of the silver nitrate applied. One application of nitric acid, made in precisely the same way as the carbolic acid, will usually cure your patient; but you must see to it that there is no redundant acid, and that the canal is immediately afterwards syringed out with water and swabbed with olive oil. Its use is, however, open to the grave objection of occasionally causing a troublesome narrowing of the urethra, which may make the woman's condition worse than before. These acids are best applied through French's speculum (Fig. 10).

STRICTURE OF THE URETHRA.

Owing to the shortness and the large size of the female urethra, narrowing of its calibre is by no means so frequent as in that of the male. But it sometimes occurs, and from analogous causes, although more frequently from operations on the meatus. The treatment is, therefore, the same as that for stricture of the male urethra; but it is much simpler, dilatation being performed either with the finger or the uterine dilator. Usually the narrowing affects the whole urethra; but sometimes it is limited to the meatus or to some circumscribed spot in the canal. The brunt of the dilatation should then be borne as much as possible by the strictured points, and the instruments used for stricture in the male would be better adapted.

URETHROCELE.

Sacculation, or pouching, of the urethra is usually an accompaniment of cystocele, and is then remedied by an operation designed for both lesions. But it may exist by itself, and then needs a special treatment. The symptoms are local uneasiness or pain, and painful micturition. These come from the inflammation caused by decomposition of the urine detained in the pouch. Pus can usually be pressed out of the urethra, and the meatus is often swollen and red from being scalded by the irritating discharges. Another symptom is partial incontinence of urine in coughing, sneezing, or in making a misstep. This lesion is caused almost always in child-birth, either by the laceration or by the over-stretching of the longitudinal muscular fibres of the urethra. It is discovered by the thick ridge felt through the anterior wall of the vagina, or by a bulging at the site of the pouch, which can be effaced by a pressure that also causes a few drops of urine to trickle out.

The treatment consists first of astringent applications made through a urethral speculum, or by the introduction of suppositories of tannin or of alum. These failing, narrow strips of the urethra may be burned with Paquelin's cautery, through

the slit in the cylindrical speculum, or a wedge-shaped piece of the pouch itself may be excised, and the wound at once sutured. Emmet recommends the making of an artificial urethro-vaginal fistula, or, as he calls it, a "button-hole" opening in the bottom of the pouch. The urethrocele being made still more prominent by a grooved sound in the urethra, a longitudinal slit of about half an inch is cut into it, and the redundant mucous lining of the pouch is seized, drawn out and snipped off. To prevent the healing up of this wound, the raw edge of the mucous membrane is sewed to the raw edge of the vagina—that is to say, the edges of the whole wound are "whipped" or "over-cast." Care must be taken that the neck of the bladder is not implicated by the incision, which must be limited strictly to the urethra. Since, therefore, the incision does not extend into the bladder, the woman can hold her water at will; but, when she micturates, the urine passes out of the artificial opening and not through the meatus. The urethra is syringed out daily with carbolated or with sublimated solutions, until the inflammation is cured. Even then, as the "button-hole" gives no inconvenience, it need not be closed, unless this be the wish of the patient. Closure is effected, as in other uro-genital fistulæ, by denuding the edges and sewing them together.

PROLAPSE OF THE URETHRA.

Another affection of the urethra is prolapse, or ectropion, of its mucous lining. This usually happens in children, but you will occasionally see it in adults of advanced age and impaired health. It is readily told from a caruncle by its less vivid color, by the absence of bleeding, and by a lower grade of sensitiveness. It also involves the whole circumference of the meatus, which a caruncle never does. It is attended with painful coition and micturition, and often interferes with walking.

A cure is attainable by various plans. Seguin introduces a female catheter into the bladder, and ties over it the everted mucous membrane. One old lady of seventy I cured by

snipping off a narrow strip of the mucous membrane, and applying to the raw surface strong sulphuric acid. I should have preferred fuming nitric acid, but it was not procurable in the small village where this lady lived. The attending physician in this case hastened the cicatrization of the wound, by subsequent touches with the lunar-caustic pencil. Were I now to be called to a case of prolapse of the urethra, I would treat it somewhat differently. If the tumor were small, I should burn a narrow streak around its whole circumference with the benzoline cautery; or else make Emmet's "button-hole" in the urethra, and draw through it and remove the redundant portions of mucous membrane, keeping the fistula open until the prolapse had disappeared from the meatus. Were the tumor large, I should draw down the redundant tissue, and remove it with the hot wire of the galvanic battery.

POLYPUS OF THE URETHRA.

Very rarely, indeed, will the urethra be the seat of a true polypus. When present, it starts from a point high up in the canal, usually at the junction of the urethra with the neck of the bladder, and very generally escapes detection until the patient has passed through several hands. Sometimes it dangles in the bladder, and then stops the flow of urine like a ball-valve. Whenever the act of micturition is obstructed, the physician should search the bladder for a stone, or for some other foreign body, and, failing to discover one, should dilate the urethra and explore it with his finger. A polypus should be twisted off, or be snared in the noose of a double canula. Once removed, it never returns.

CANCER OF THE URETHRA.

A cancer affecting the urethra primarily is a very rare disease. I have seen but few examples of it. In one, the woman suffered from obstruction, and I wished to scrape away the growth; but she would not consent, and I lost sight of her. Once I removed a sarcomatous tumor, which grew from the lower edge of the meatus and blocked it up. This was ten

years ago, and up to this time it has not returned. The proper way to treat such growths is to scrape them away, and to burn the raw surface with the actual cautery.

If a removal of the morbid mass is not possible, the most that can be done is to keep the canal open by the daily passage of a catheter, and the occasional use of a laminaria tent; or else to make an artificial vesico-vaginal fistula in the manner yet to be described to you.

INVERSION OF THE BLADDER.

The last affection to which I shall advert is not strictly one of the urethra. I refer to inversion of the bladder through this canal, an accident of which several cases have been reported.* At first blush this may seem to you an impossible accident; but remember how dilatable is this canal. Through it very large calculi and other foreign bodies have been removed from the bladder. Again, in cases of imperforate hymen, or of absence of the vagina, coition usually takes place through the urethra. The treatment here is to replace the bladder, and to narrow the urethral canal, either by the actual cautery, or by the removal of a strip of mucous membrane and the stitching of the edges of the wound together.

* *Gazette Médicale de Paris*, January, 1874, p. 8. *Medical and Surgical Reporter*, February 1st and 8th, 1879, pp. 94 and 115.

LESSON IV.

VESICAL DISORDERS OF WOMEN.

IRRITABLE BLADDER—CYSTITIS—INCONTINENCE OF URINE—STONE IN THE BLADDER.

VERY few women indeed are free from some kind of vesical trouble, coming on at one period or another in the course of life; and this fact leads me to think that a brief consideration of some of these maladies, this morning, will not be unprofitable, more particularly if it enables us to lay down some well-defined principles of treatment. The anatomical peculiarities of the bladder, its position immediately behind the hard symphysis pubis, its relation to and close connection with the womb and vagina, make this organ very liable to be influenced by disturbing elements. Classifying these causes according to their source, we find that for clinical instruction it will suffice to divide them into intrinsic causes,—those arising within the bladder; and extrinsic,—those whose origin must be sought for outside of the bladder. The disorder itself may, further, be either functional or organic, according to the presence or the absence of tissue-changes. The latter includes cases accompanied by structural change in the tissues. In the former no such local lesion exists, but from mechanical obstructions, nervous sympathy, or from reflex action, the vesical functions are interfered with to such an extent as to claim the attention of the physician.

Urinary troubles, as you know, are not confined to women; they exist in both sexes. Owing, however, to physical peculiarities, such as the shortness and the large bore of the female urethra, and the anatomical relations of the bladder to the pelvic organs, vesical diseases in the female vary considerably from those of the male, and therefore need separate

mention. For instance, cystitis, or catarrh, of the bladder, is far more frequent in women than in men; but, on the other hand, on account of the absence of a prostatic gland, and on account of the short and capacious urethra, the former are, as a rule, less profoundly affected by it. Vesical troubles in women may come from precisely the same causes as those in the other sex, such as urinary calculus, gonorrhœa, acrid urine, or a chill; but the most common source, beyond all question, is some uterine or some ovarian disorder, affecting the bladder either mechanically, or through reflex action or irritation. The next cause in order of frequency is perhaps hysteria. The third may be represented by a class of injuries sustained by the bladder during labor; for instance, the nipping, or contusion, which it gets from prolonged pressure of the child's head.

Since disorders of the bladder are invariably stubborn, as well as most distressing and annoying to the patient, they are worthy of our careful study. I shall, however, barely refer to the constitutional, or general, treatment of such affections as are common to both sexes, since it will not vary in women, and, therefore, comes more properly within the province of my colleague, the professor of surgery. There are, however, for obvious reasons certain points of difference which we need to observe in the local treatment, and to which I shall now call your attention.

Whenever a woman comes to you with a history of frequent or of painful micturition, you must seek out the cause, though this is often by no means an easy task. Is it organic, or is it functional, or is it emotional? Does it lie inside or outside of the bladder? are the questions you must ask yourselves, and carefully consider. In general, when the bladder troubles arise from a catarrh of its lining membrane, the recumbent posture gives but little ease; when, however, they spring from such outside causes as displacement of the womb and pelvic tumors, the bed affords marked relief. Sound the bladder for stone, while you examine its base by the index finger passed up into the vagina. Large stones can be felt

and even outlined through the anterior wall of the vagina, while a small one will rarely escape detection by this double manipulation. Examine the urine, and determine whether it is acid or alkaline; whether it contains pus or mucus, sugar or albumen. The clinical history of the patient will throw light on the matter; the vesical distress may have followed a labor, and then it is clear that some internal lesion must exist. It may have occurred while the husband was having a local treatment, and then it will probably be gonorrhœal. It may have come after a mental shock., and is therefore nervous.

Next consider all the extra-vesical causes. Is a uterine tumor or a displaced womb pressing upon the bladder? Is the woman pregnant?—for the gravid womb often annoys the bladder by its bulk. Is the womb fixed by pelvic inflammation, and is the rectum perfectly free from fissure or from hemorrhoids? Or is the woman hysterical and nervous? If by pursuing this line of inquiry you have happily hit upon the cause, you will next try to remove it.

IRRITABLE BLADDER.

To illustrate these preliminary remarks, I shall bring in two patients. The first is a young woman who bore a child about a year ago. Since then she has never been altogether free from womb troubles, but she counts them as nothing when compared with the distressingly urgent and frequent desire to pass water, from which she suffers. She tells me that her labor was a short one, but that the *ardor urinæ* did not come until she began to get about. She also says that she is more comfortable when in bed. Now this means either a stone or a foreign body in the cavity, or it means some cause external to the bladder. It does not mean pure cystitis, that is to say, a catarrh of the lining membrane of the bladder. Upon passing my index finger into the vagina, I find the neck of the bladder tender to the touch, and, pressing upon it, the enlarged cervix of an over-heavy, retroverted womb. Here is a cause quite sufficient to produce all these symptoms, but I shall not jump to a conclusion until I have

first sounded the bladder. This I invariably do in such cases, because, if a stone be present, no treatment short of removing the foreign body will do good, and moreover, the absence of a stone will confirm me in my diagnosis. I pass in the sound, and with my finger in the vagina raise the floor of the bladder to meet its tip. Finding no stone, and no rugosities on the bladder walls, in default of any other cause I am forced to conclude that it is the dislocated cervix that is teasing the bladder by its pressure. The remedy here indicated is a pessary, which I shall at once put in, and charge her to wear. But the neck of the bladder may be so tender as to resent the intrusion of so hard a pessary as the Smith-Hodge, which is the best of all. In such a case, give belladonna in some form, and use the softest pessary you can find—the inflated rubber ring is one of the best. Our patient does not complain of the pessary, so that I have no doubt she will be able to wear it, and be ultimately benefited by it, especially with the assistance of a weekly local treatment to the congested womb. Let me say, in passing, that cases of frequent and painful micturition often happen in overtasked girls, or in sterile women of feeble frames, whose wombs are of natural size, but anteflexed. Now, I do not think that, in the majority of these subjects, the dysuria is due to the pressure of the fundus of the womb upon the bladder. On the contrary, I believe anteflexion to be the natural condition of the womb in virginity and in sterility, and it therefore needs no local treatment, unless dysmenorrhœa be present. Vesical distress, in these cases, is neurotic or emotional, and arises from nerve-exhaustion, produced in the one by brain-cramming, and in the other by sexual excess—the reproductive apparatus being kept in a state of constant congestion, without the local repose which gestation and lactation bring. The bladder is hysterical, if you choose so to label it, and the motto of an hysterical bladder, as regards local treatment, should read, *noli me tangere*. A long vacation, functional rest, building-up remedies and antispasmodics, are here needed, together with belladonna or copaiva by the mouth, or by the rectum, to

allay the local irritation. And, by the way, let me here say that belladonna is a good stand-by in almost every form of vesical irritation. I usually give it according to the following prescription, which I can recommend:

℞. Atropiæ sulphat.,	gr. ss.	
Aquæ destillat.,	f. ʒiv.	M.

S.—Four drops before each meal, in a wineglassful of water. To be increased or diminished according to the constitutional effect.

CYSTITIS.

But the most troublesome and obstinate of all affections of the female bladder is chronic cystitis, which you will recognize by frequent and painful micturition, and by mucous or purulent deposits in the urine. It usually starts from the lesions produced by labor. It may come, however, from other causes as well. The worst case I ever saw was due to a single over-distension of the bladder. Some twenty years ago the lady traveled a whole day in a stage-coach, and from motives of delicacy did not empty her bladder. When at her journey's end, she could not pass her water, and had to call in a physician to draw it off. On that day sufferings began which have not up to this day ended. This would not have happened had she imitated the example of the French lady in Sterne's *Sentimental Journey*, who, without a blush, stopped the coach and got out.

Our second patient is a terrible sufferer from this disease. She has been in my hands, off and on, for many months, and I know her history by heart. It is as follows: Her first labor took place some three years ago. It proved a tedious one, and was ended by the forceps. The prolonged pressure of the child's head on the neck of the bladder so bruised it as to cause a very distressing cystitis, which baffled all treatment. In time she grew somewhat better, but a second pregnancy lighted up all the old symptoms, and she came to me when three months gone. In vain I tried all the stock remedies by the mouth, vagina, and rectum. Finally, as she could not come into the hospital for a local treatment, I forcibly dilated

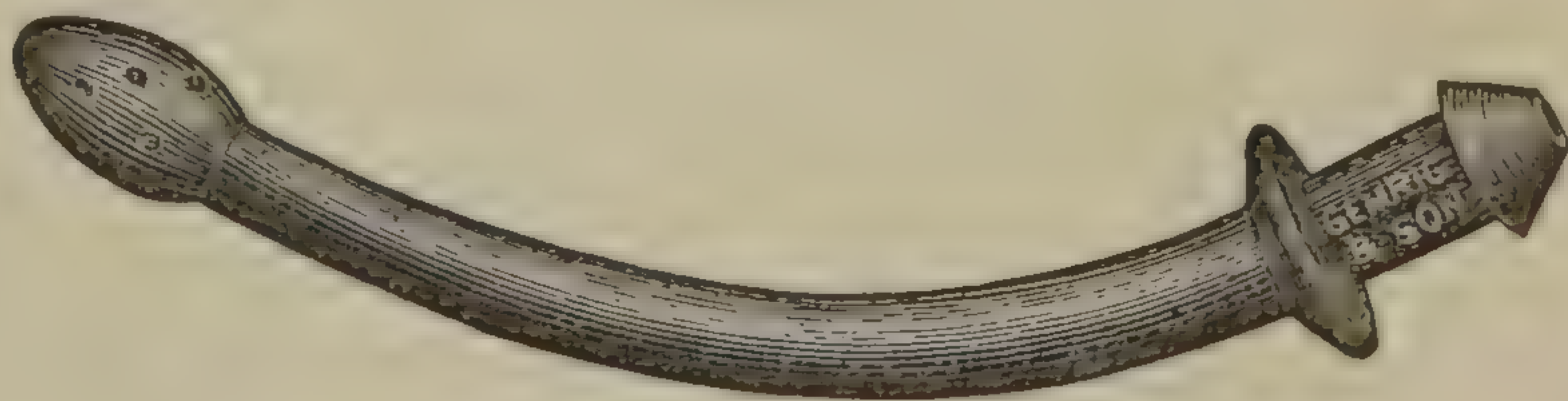
her urethra. So much good was gained by this treatment that she was enabled to follow her duties with comparative comfort, and I lost sight of her for many months. But after her second labor she became much worse than before. She tells me that she now is called upon to pass her water from thirty to forty times during the day, and from five to ten times at night. Thoroughly worn out by these endless torments, she has come to-day to have the operation of forcible stretching repeated. The treatment of cystitis by rapid dilatation of the urethra is somewhat empirical, though not wholly irrational. It presupposes the presence of a fissure in the neck of the bladder, which may or may not exist, and, in so far as that is concerned, its employment is empirical, because we rarely can tell beforehand whether such a lesion is present. But, on the other hand, it over-stretches and temporarily stuns the muscular fibres which surround the whole urethral track, from neck inclusive to meatus exclusive, and by which women are enabled to hold their water longer than men.* This permits the escape of the urine with as little pain and as little spasm as possible. In the majority of cases the dilatation is followed by great relief; often by a lasting cure. In the latter case we should attribute our success to the previous existence of a fissure, healed, as are analogous anal fissures, by the surgical manœuvre of overstretching. Since the fact is generally admitted that fissure of the sphincter ani often succeeds labor, it is by no means improbable to suppose that in like manner fissures may be formed in the urethral mucous membrane. But you must take this on trust, for I have never yet been able to feel what I could swear to as a fissure in the neck of the bladder.

Let me show you how to perform this operation. First, of course, etherize your patient as ours has been, for the pain would otherwise be unbearable. Next, pass in the uterine dilator, and gently stretch open the urethra, until it allows me to coax in, very slowly, my little finger, which has been well greased with carbolated oil. I can feel the sharp edge of the

* *British Medical Journal*, April 27, 1878, p. 624.

internal meatus dilate before it, and now it is wholly in. I am able to feel the inner surface of the bladder, which is not thickened and rough, as one would suppose from the severity of the symptoms, but smooth and velvety. I always take this opportunity to explore the bladder for stone or other foreign bodies; for the finger is a sound with brains in it, and, therefore, worth much more than the ordinary metallic sound. Sometimes the upper margin of the meatus is slightly torn by this operation, and free bleeding may take place. This, however, I have, with one exception, always been able to stay by a piece of absorbent cotton moistened with Monsel's solution. The exception occurred in the person of this very woman. When I previously dilated her urethra she was pregnant. The vessels of the vulva were accordingly enlarged and engorged, so that the bleeding from the slight rent of the meatus was altogether more than I had bargained for. Since no astringent seemed to be of any service, I passed in a fine needle deep down to the bone, and closed up the wound by a stitch. Those of you on the front seats can see the notch in the meatus still left by the former operation. Candor compels me to mention one objection to this operation, and that is the possibility of partial incontinence following it. But I have never seen this happen when only the little finger was used, or when the dilator was not opened more than one inch. In my own cases this has never happened, but I have seen two examples of it, in which the thumb had been forced into the bladder.

FIG II.



SKENE-GOODMAN CATHETER, NATURAL SIZE.

But supposing this dilatation does no good; what then? Put the woman to bed, and drain off her urine by such a self-retaining catheter as the Skene-Goodman. It is so short that

it barely goes in beyond the neck of the bladder, and the holes in its bulb are so small that the thickened and softened mucous membrane is not likely to be sucked into them and to be torn off, as it will be in the ordinary catheter with larger openings. If this should fail, try a milk diet, rest in bed, and large doses of quinia. Inject into the bladder, though never more than an ounce at a time, solutions of the silver nitrate, slowly increasing the strength by two grains every other day, until thirty grains to the ounce are reached. Keep the solution in the bladder not longer than from five to ten seconds, then withdraw it, and, if the pain be great, use a hypodermic of morphia.

Weak solutions of carbolic acid, of boric acid, and of salicylic acid are highly spoken of; so especially are a two-grain solution of quinia and a five-grain one of potassium chlorate. Braxton Hicks lauds a two-drop solution of hydrochloric acid. He injects this daily, an ounce at a time, repeating it until the urine flows off clear. He then follows it with one ounce of water, in which from one to two grains of morphia have been dissolved.

One hint about the use of the ordinary flexible catheter in these cases: When drawing off the urine do not let the tip of the instrument go much beyond the neck of the bladder, else the mucous membrane will flap down violently upon it and be bruised. When fluids are injected, the tip of the catheter need not enter the bladder at all, but preferably should stop just short of the neck. Sometimes every kind of treatment will fail, and then we may be obliged to put the bladder at rest by making an artificial vesico-vaginal fistula. This operation is the same as in vaginal lithotomy, which will presently be described. Since such a fistula tends to close up, it is best to stitch the vesical edge of the wound to the vaginal edge by interrupted sutures, or else to put a glass eyelet in the wound.

PARTIAL INCONTINENCE OF URINE.

There is another disturbance of the bladder peculiar to fe-

males, and that is an inability to hold the water during even such slight succussions as are imparted by laughing, coughing or by running. This generally happens in women who have borne many children, but I have seen it as well in unmarried women of lax fibre. Apart from ferruginous preparations, the best remedy that I know for this infirmity is a combination of tincture of belladonna, the fluid extract of ergot, and the tincture of nux vomica. If this fails, I should recommend the application of carbolic acid, or a cautious trial even of nitric acid, to the urethra, with proper hygienic treatment. Incontinence of urine often depends on an overfull bladder; a condition which must not be overlooked. It can always be diagnosticated by supra-pubic palpation and by the use of the catheter.

Over-continenence or retention of urine is usually an hysterical symptom.

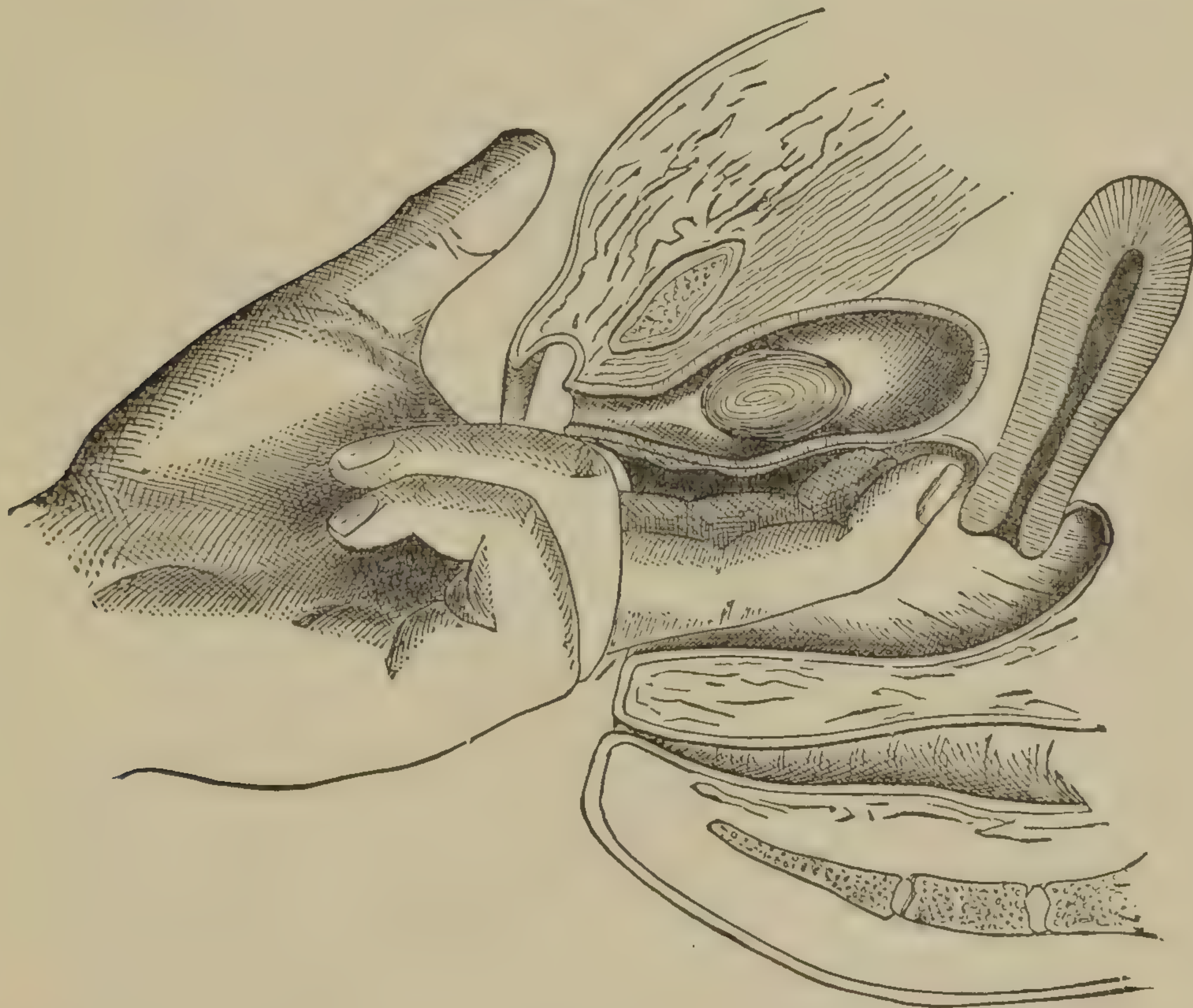
STONE IN THE BLADDER.

Stone in the female bladder is far more rare than in the male. Owing to the shortness and the larger bore of the urethra, the calculus, after its escape from the ureter, does not usually lodge in the bladder, but passes away at the first micturition. As a rule, the stones found in the female bladder are not formed in the kidney. They are generally foreign bodies, such especially as hair-pins, introduced from without, and afterwards incrustrated with urine salts. Since the urethra is short, and since there is no prostatic gland behind which the stone can hide; since also the whole floor and fundus of the bladder can be lifted up, by a finger in the vagina, to meet the tip of a sound passed in per urethram, a stone in the female bladder is not so likely to elude the search as one in the male bladder. Further, if the diagnosis cannot be fully made out with the sound, the urethra can be dilated and the bladder explored with the finger.

Should the stone be not larger than the girth of the index finger, dilate the urethra to that extent, and remove the foreign body, either with a delicate pair of forceps, or, as Ogston

recommends,* by coaxing the stone up to the neck of the bladder, and out through the urethra, by means of the two fingers in the vagina. But, if it be larger, incurable incon-

FIG. 12.



COAXING STONE OUT OF BLADDER BY TWO FINGERS IN VAGINA. (After Ogston.)

tinence of urine will probably follow its removal through the overstretched urethra. It should, therefore, be removed by lithotripsy, if it be soft and crushable, or by lithotomy, if it be hard or bulky. The operation of vaginal lithotomy in the female is, however, so easy and so safe a one, that it would, in the majority of cases, be far safer for the general practitioner to extract the stone by incision than by repeated crushings.

Vaginal lithotomy is best performed after Emmet's plan. A sharply-curved uterine sound is introduced into the bladder, and made to push down the base of the bladder at a

* *Edinburgh Medical Journal*, 1879, p. 27.

point just beyond its neck. With a pair of scissors a hole is then snipped into the bladder upon the tip of the sound. One blade of the scissors is then passed into the opening, and the base of the bladder and the anterior wall of the vagina are cut upward in the median line towards the cervix uteri. By following this course the incision will avoid injury to the neck of the bladder and to the ureters. After the stone has been extracted, the lips of the wound are to be brought together by silver sutures, and the case treated like one after the operation of vesico-vaginal fistula. But, if the stone has produced cystitis or great irritability of the bladder, it would be better to leave the incision open, and keep it open in the manner previously described, until the bladder has become restored to health.

LESSON V

FISTULÆ OF THE FEMALE GENITAL ORGANS.

URO-GENITAL FISTULÆ; RECTO-VAGINAL FISTULÆ; PERINEO-VAGINAL FISTULÆ.

FISTULOUS communications between two of the pelvic organs are by no means rare. Their names, being taken from the organs they involve, are descriptive of their character. Thus in Fig. 13, A represents the course of a vesico-uterine fistula; B, that of a vesico-utero-vaginal fistula; C, a vesico-vaginal fistula; D, a urethro-vaginal fistula; E, a recto-vaginal fistula; F, a perineo-vaginal fistula.

They may come from accidents, such as a fall upon a stake or a slide down a hay-rick upon a pitchfork. They come from abscesses, from fever-sores in the vagina, or from a stone in the bladder ulcerating its way into the vagina. But in the vast majority of cases they are produced by the lesions of labor, that is to say, either from pressure-sloughs, or from the extension of a cervical laceration into the bladder or into the rectum.

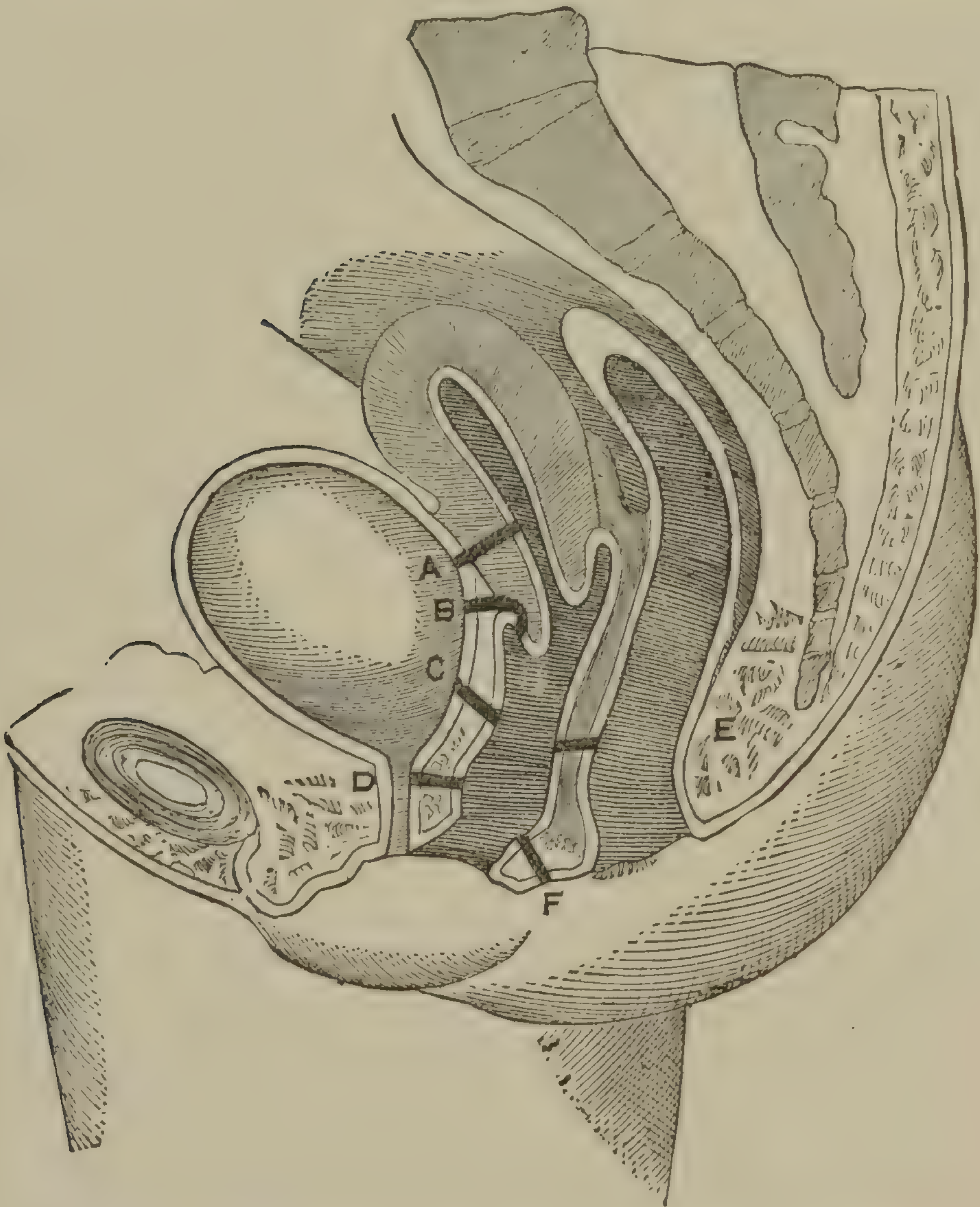
While, then, lacerations of the perineum are too often due to the abuse of the forceps, its disuse or its tardy use leads to the formation of these fistulæ. Hence it is that they are rarely found among the well-to-do, but among the poor, who are attended by midwives or by inexperienced physicians. In my experience, indeed, no gynecological operation is so unremunerative to the surgeon as the one for this lesion.

The fistulæ most commonly met with are those which form a communication between some portion of the urinary tract and some portion of the genital tract. Of these I shall speak first and at length.

URO-GENITAL FISTULÆ.

Their history is as follows: A few days after a labor in which the second stage has been protracted, a deep pressure-slough on the vesico-vaginal or on the vesico-uterine septum, falls off, an opening is left between the two organs, and the

Fig. 13.



FISTULÆ OF THE GENITAL ORGANS. (MODIFIED FROM BEIGEL.)

urine dribbles away per vaginam. The treatment should now consist in the introduction of a self-retaining catheter, and in cleansing the vagina with repeated injections of a 2.5% solu-

tion of carbolic acid, or of a 1:2000 solution of corrosive sublimate. These simple measures will often close up a recent hole of large size. Should they fail, alternate application of nitric acid and of the silver nitrate may be tried. By these means I once succeeded in healing the only lesion of this kind that ever occurred in my own practice.

Should this treatment prove unavailing, the opening will degenerate into a fistula, and the woman's life then becomes a burden to her. Always wet with the dribbling urine, her person becomes offensive, and her vulva and thighs get sore. Excoriation of the vagina also takes place, the raw surfaces becoming incrustated with urine salts. In so far as her own comfort is concerned, she is no better off with a hole in the bladder not large enough to admit a probe, than with one involving the whole base of the bladder; for the former will equally drain off the urine as fast as it is secreted.

Not more than thirty years ago, Dieffenbach pronounced these fistulæ to be the opprobrium of the profession. So rarely indeed were they in his time healed, that every cure was heralded in all the medical journals. Now, thanks to the genius of the late Marion Sims, failures are the exception to the rule.

The means which he devised for the treatment of these fistulæ were, firstly, the duck-bill speculum, by which the vagina can be widely stretched open, and the fistula placed within operative reach; secondly, a self-retaining catheter; and thirdly, the silver suture, which is not liable to cut out by ulceration. Next to him, we are indebted to Emmet and Bozeman, of New York, to Agnew, of Philadelphia, and to Simon, of Heidelberg, for great improvements in the details of the operation, and for much instrumental ingenuity in its execution.

The instruments needed for this operation will vary with the taste and the skill of the operator; but there are several which will be found very useful. These will consist of a strong needle-holder, a few fine lance-pointed needles, two uterine tenacula, a duck-bill speculum, a long rat-toothed for-

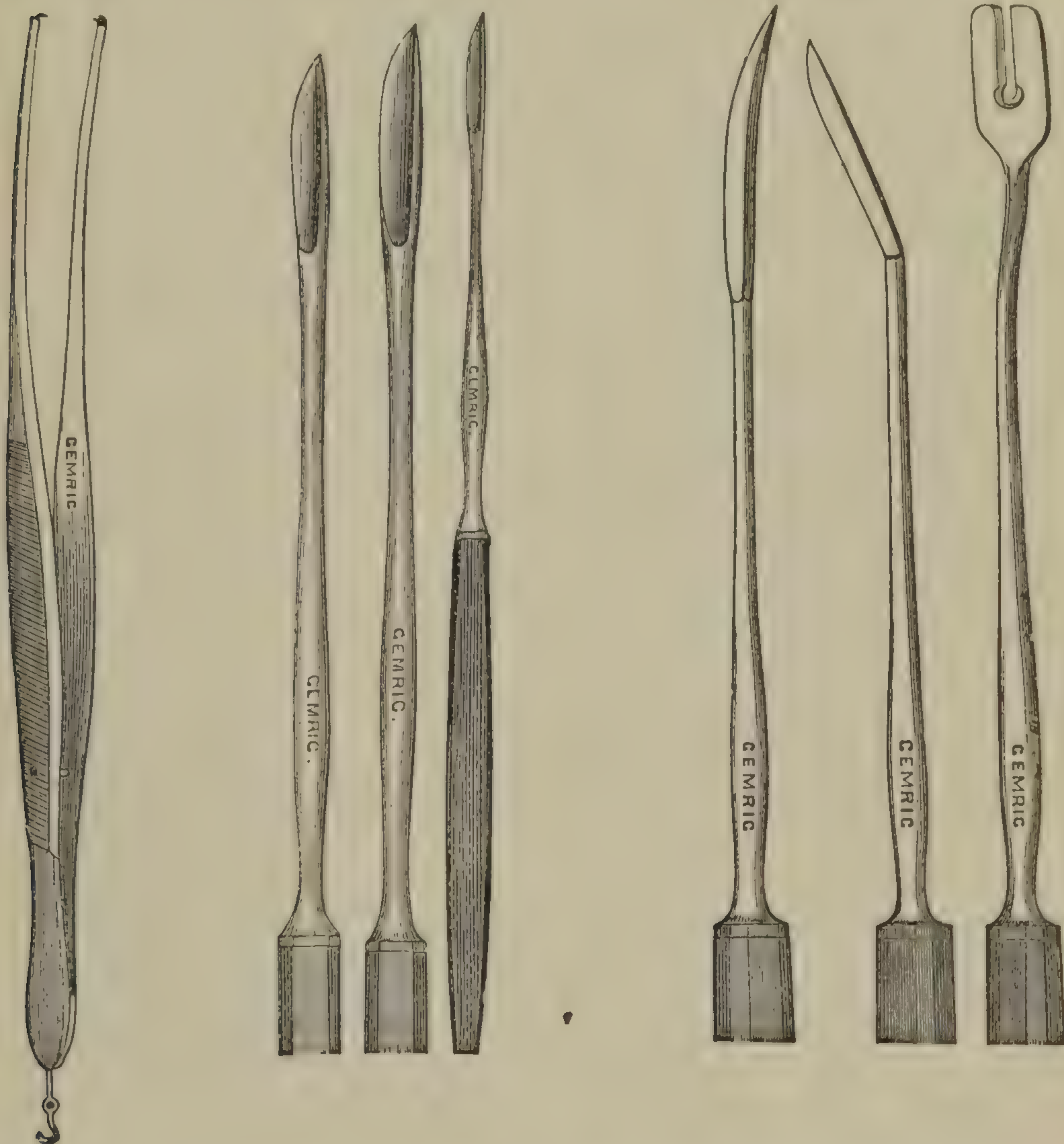
ceps with a blunt hook and a wire-adjuster at the end of its handle (Fig. 14), scalpels of various sizes, a double-edged knife, two right and left-angled ones (Figs. 15, 16, 17, 18 and 19), a wire-twister and a wire-adjuster (Fig. 20), or in their stead, perforated shot and a shot-compressor. Several

FIG. 14.

15, 16, 17,

18, 19,

20.

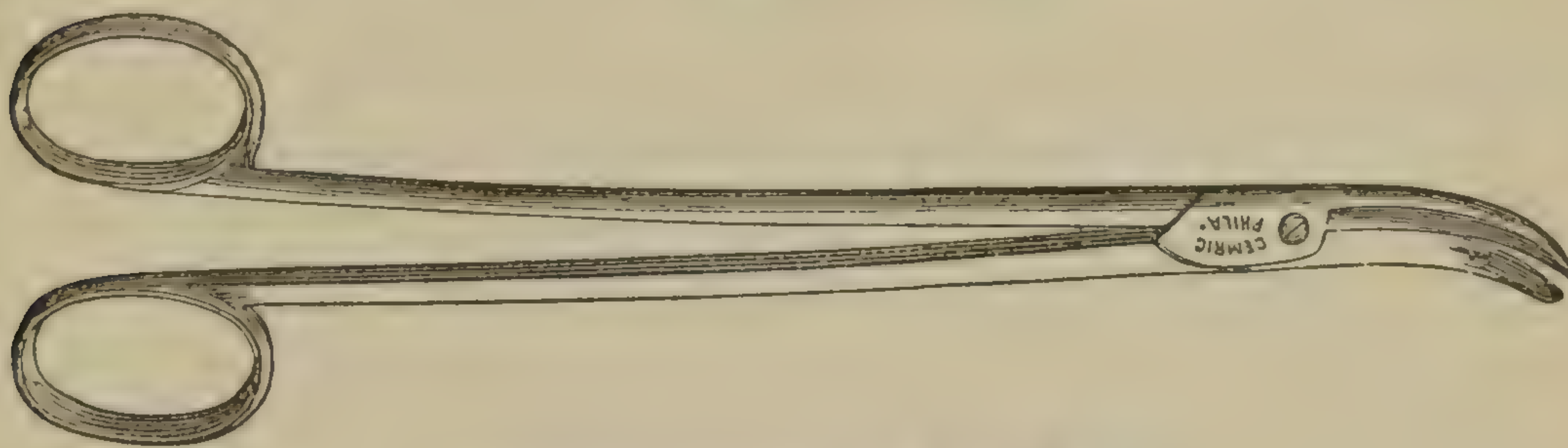


pairs of scissors, one curved on the flat (Fig. 21), and others with right and left curves, will also be found very useful. Among the best of these are Emmet's (Fig. 22), and the very ingenious one devised by Heywood Smith (Fig. 23).

In illustration of these remarks, I shall now bring in a girl

with a fistula, unfortunately at the neck of her bladder, and involving both bladder and urethra. I say unfortunately, because at this site two sets of antagonistic muscular fibres interlace, which tend to pull on the edges of the wound and keep them from uniting. The fistula was caused by very

FIG. 21.



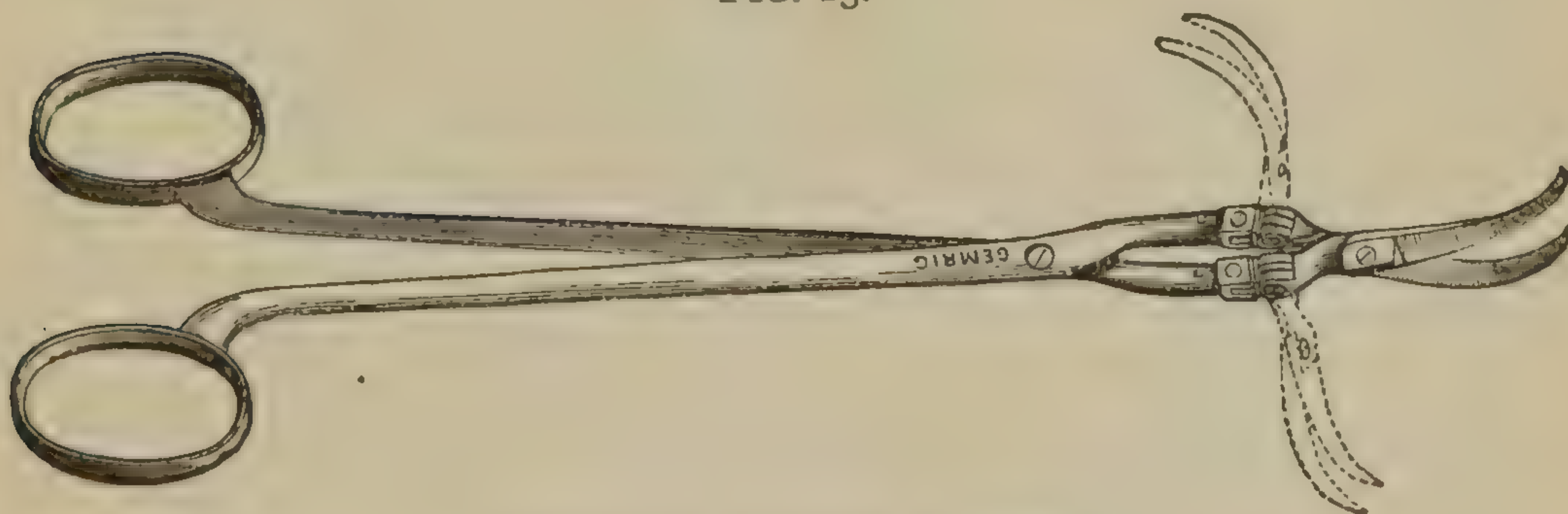
SCISSORS CURVED ON THE FLAT.

FIG. 22.



EMMET'S DOUBLE-CURVED SCISSORS.

FIG. 23.



HEYWOOD SMITH'S SCISSORS.

unusual means. She had an hysterical bladder, which refused to empty itself without the catheter. Her physician, tired of being sent for at unseasonable hours to draw off her water, very properly taught a member of her family how to do it. One day, the catheter, which she says was a silver one, broke off near its tip in the bladder. Efforts to remove

the fragment per urethram failing, an opening from the vagina into the bladder was made by her physician. In lithotomy in the female the incision should begin just above the neck of the bladder, and run upward toward the cervix uteri. It then heals up without any difficulty; the trouble, indeed, lies in trying to keep it open long enough to cure the accompanying cystitis. But in this case, for some reason, the urethra and the neck of the bladder were both slit open. The lips of the wound refused to knit together. Since that time repeated operations, performed on her by different physicians, have not only wholly failed, but they have enlarged the opening so that it will now admit my finger. A few months ago, I tried my hand at it, but without the slightest gain. The stitches tore out as if the tissues were made of blotting-paper, and the shotted wire-loops hung from either lip of the wound like ear-rings. She was then in wretched health, and I blame myself for having made the attempt; but she had come from a long distance, and I allowed myself to be overpersuaded. She was at once put on large doses of the dried iron sulphate in the form of Blaud's pill, and sent home to recruit.

She returned two weeks ago in very much better health, but the vagina and vulva were so much excoriated that I did not venture to operate on her at once, as she wished. She was put on a preparatory treatment, which has done her so much good that you will do well to charge your memory with its details. All the hair encrusted with urine salts was cut off. The vagina was washed out twice daily with a strong solution of alum, and the sore vulva and perineum smeared over with an ointment of the zinc oxide made as stiff as possible, so as not to be readily washed away by the dribbling urine. Some phosphatic deposits around the fistula were scraped off, and the bleeding surfaces touched with the silver nitrate. Several times, by way of change, all the excoriated surfaces were brushed over with a two per cent. solution of the silver nitrate. I also waited for her catamenia to come and to go; they ended six days ago. Yesterday she took a dose of oil, and this morning one grain of opium.

In what posture shall she be placed? In one of three—the semi-prone, the knee-elbow, and the lithotomy. Of these you will find the last, in the long run, to be the best; but sometimes one posture suits the case better than another. In her case, after examining the fistula in each of the three postures, I found the knee-elbow one to expose the fistula the best. She will, therefore, be put in that position, her chest being supported by a small box, to which a pillow has been secured by a roller-bandage. For retaining a patient in this position, Bozeman has devised an ingenious harness.

How shall the ether be given? After trying many plans I have come to the conclusion that Allis's ether inhaler (Fig. 24) is the very best yet devised, and I now invariably use it

FIG. 24.



ALLIS'S ETHER INHALER.

in every operation needing an anæsthetic. It consists of a metallic frame with numerous slits in its sides through which a roller-bandage is passed and repassed in parallel rows.

Over the frame is laced a morocco hood, which is sufficiently large to cover the nose, chin and mouth, but not the eyes. The ether is dropped continuously upon the layers of the roller-bandage, which offer a very large evaporating surface.

This inhaler possesses several advantages over the ordinary towel-cone: Plenty of air being mixed with the ether, the unpleasant choking sensation is greatly diminished. Less ether is needed, and less time is spent in inducing complete anæsthesia—five minutes being generally long enough. The last advantage, and by no means the least one, is that the ether is dropped continuously on the inhaler, which need never be removed from the face. There is, therefore, an entire absence of those painful struggles, which are so frequently induced at every fresh instalment of ether poured into the towel-cone.

After exposing the fistula by the duck-bill speculum, and after introducing a catheter into the bladder as a guide, I begin to denude the edges of the fistula by beveling them down to, but not through, the mucous lining of the bladder and urethra. The edges of the fistula are hooked up by a uterine tenaculum, and the cutting is done partly by a very small double-edged and curved tenotomy knife, and partly by right-hand and left-hand knives and scissors. The funnel-shaped wound thus made presents the broadest raw surface possible on such a thin septum as that lying between the vagina and the bladder. The stitches will now be passed, about five to the inch, by bending the end of each wire over a silk loop, with which a lance-pointed needle is armed. Aided by the tenaculum, which hooks up the tissues firmly, the needle, held in the jaws of a needle-holder, will enter the vaginal mucous membrane about a quarter of an inch from the denuded edge, and slope upwards until it emerges just at the bladder-edge. It is seized and drawn through, and the opposite edge of the wound is hooked up by the tenaculum. The needle is then carried on by being introduced at a corresponding point near the bladder-edge. As soon as it appears on the vaginal surface, the tenaculum is released.

from its hold, and its hook is passed over the needle point so as to make counter-pressure. In this manner eight stitches have been passed—six on the wound itself and one at each end—and each one will be secured by a perforated shot. During the operation the urine has been trickling over the wound, and has of course deposited some of its irritating salts on the raw surface. To remove these, and to insure union by the first intention, I shall syringe the wound with carbolated water just before and each time a shot is run down and pinched.

Twisting the wires together is the method of securing them mostly in vogue; but if this be done, the wire adjuster must first be run down each wire to set it, so that when the ends are twisted, the twist shall start directly over the line of incision and not to one side of it. I do not think that it possesses any advantages over the shot, and from long habit I prefer the latter. With them I can estimate the amount of tension on the wires, by them eversion of the lips of the wound is prevented, and they, further, seem to me to act as splints and adjusters.

I have been debating in my mind whether or not to leave in the Skene-Goodman self-retaining catheter. But, although I have frequently dispensed with one, it seems to me best not to do so in this instance. My reason for concluding to use it is that, since the urethra is involved, the subsequent swelling may occlude it and prevent the woman from passing her water. Should the little holes in the nozzle become stopped up by mucus or by phosphatic deposits, the catheter must be removed, cleaned and re-inserted. They must not be cleared by the insertion of the nozzle of a syringe into the free end of the rubber tube, and by the injection of warm water into the bladder, as this would distend it too much. If the bladder resists the intrusion of the catheter, it can be quieted by rectal suppositories containing one grain of the aqueous extract of opium and half a grain of the extract of belladonna. After the first twenty-four hours, the vagina will be washed out twice daily by a three per cent. solution of carbolic acid or

by a 1:2000 solution of corrosive sublimate. The bowels will be kept bound for a week, and then be opened by castor oil. The stitches will be removed from the eighth to the tenth day.

The operation which has just been performed was without complications. The fistula was unusually accessible, the blood-loss trifling, and very little time was needed for denuding the edges and for sewing them up. But such is by no means the case with most of these fistulæ. I have sometimes been over two hours at a single operation, and sometimes been at my wits' end to know how to meet certain complications. It will, therefore, be well for you to have some broad rules for guidance—aphorisms, we will call them.

The best time for the operation is during the week following that of menstruation. If it be done earlier, the flux will be likely to return; if later, to be precipitated. In either case it is liable to become hemorrhagic, and to mar the success of the operation.

The first thing to be done after the patient has become fully anæsthetized, is to sound the bladder for stone. For there is no doubt, as Dr. H. F. Campbell has shown,* that the presence of a stone in the bladder during labor is an occasional cause of vesico-vaginal fistula. It is then liable to become incarcerated in some corner of the now always empty bladder, and be overlooked. When the fistula is cured, the distension of the bladder dislodges the stone from its nest, and evokes for the first time the characteristic symptoms of calculus. Thus it has repeatedly happened, that, shortly after the cure of a vesico-vaginal fistula, lithotomy had to be performed in order to extract a large stone—so large indeed as to show that it had been overlooked, at the time of the operation.

Sometimes, during the paring of the edges, an artery will spout, or a vein, held open by the inelastic cicatricial tissue in which it lies, will bleed without stint. No complication is more embarrassing than this, for the blood obscures the parts, and prevents further paring. A lump of ice or the finger pressed on the bleeding point, will usually stop it. A stream

* *Transactions of American Gynecological Society*, Vol. I., 1876, p. 354.

of vinegar or of ice-water, or of hot water, or one of a saturated solution of alum, projected by a syringe, are the next best hæmostatics. If these fail, a suture must be passed under the vessel, and steady traction made on the ends of the wire until the paring has been finished. The final closure of the wound by the sutures will almost always permanently stop the bleeding. To prevent these hemorrhages it is a good plan, first suggested by Emmet, to precede every operation by a vaginal douche of from one to two gallons of water, ranging in temperature from 105° to 120° . Under the impact of the hot water, the parts become blanched and shrivelled like the hands of a washerwoman, and for some time stay with but little blood in them. The most provoking accident that can happen is secondary hemorrhage, for it usually destroys the union already gained. Now, give opium and digitalis in decided doses. If the blood finds vent in the vagina, injections of hot water, or of ice-cold solutions of alum or of tannin, should be tried; and if these fail, a light tampon may be packed in. If, however, the blood collects in the bladder, the case is a pretty hopeless one so far as union is concerned. Lumps of ice pushed well up into the vagina will sometimes stop further loss, but usually the over-stretching of the bladder and the consequent tenesmus have already separated the lips of the wound. Sometimes it will be needful to cut the stitches and secure the vessel by a ligature. Strong solutions of pepsin thrown into the bladder, will greatly aid in breaking up the blood-clot and in getting rid of it.

In paring the edges of fistula, try always to cut off one continuous strip. By this means alone can you be sure that no islets of undenuded surface have been left behind. Try also not to cut into the bladder, lest troublesome bleeding should occur.

It is a good rule, further, not to invade the mucous surface of the bladder with the needle; firstly, because each suture-track may become a fistula; and, secondly, because the mouth of one of the ureters may be noosed by a stitch and

closed up. If the fistula be circular, its lips should be brought together in the direction the least resistance, whether it be found to lie at right angles to the vagina or in its axis.

Puckering at the poles of such a wound can be avoided by prolonging the surface denudation at each end to a point, or ear.

The nearer the fistula to the vulva, the easier the operation. If it be high up and difficult to reach, bring it down either by traction with tenacula on adjacent surfaces of the vagina, or on the cervix uteri. Simon's plan of passing two strong wires through the lips of the cervix, and making firm traction on them, is an excellent one. I can recommend it as greatly facilitating an operation which would otherwise be very difficult of execution.

The use of the catheter is by no means so needful after the operation as it was supposed at one time to be. The late Dr. Simon dispensed with it altogether; but there is a golden mean better than dogmatism. In small openings there is no need for it. In larger ones the water should be drawn off every four hours, or a good self-retaining catheter be used. The best one is the Skene-Goodman (Fig. 11). Whenever the self-retaining catheter teases the bladder into tormina, it does more harm than good, and should be at once removed. Sometimes it provokes a hemorrhage. A medical friend of mine operated four times, and I once, on the same woman, unsuccessfully. Each time Sims's self-retaining catheter was used, and each time an abundant hemorrhage took place into the bladder. At the sixth time, by withholding the catheter, I saved my patient from having a hemorrhage, and cured her.

Whenever a fistula at the neck of the bladder or in the urethra fails, after several trials, to be cured, before repeating the operation make an artificial fistula higher up. It will drain off the urine and allow the lower fistula to heal up. I am, indeed, not sure but this course would be the best to pursue in the outset, before touching large fistulæ on such embarrassing sites. After the cure of the original fistula, the

artificial one will be attended to. As a corollary to this, whenever the edges of a large fistula cannot be made to come together throughout their whole extent, close that end only which is lax, and reserve the rest for another operation. The united portion will in a few weeks' time so draw on the tissues as to make the edges of the ununited portion come together.

The lips of the wound must be exposed to as little tension as possible from the surrounding tissues. All cicatricial bands pulling on the edges of the fistula will, therefore, need cutting. They are made out by the finger better than by the eye, and feel like tight cords under the skin. They should be nicked at several places by scissors, and, to prevent their reunion, should be put on the stretch by plugs of glass or of vulcanite; or, as Bozeman advises, by sponges enclosed in waterproof bags, made either of rubber or of oiled silk. For this purpose I have used, with great satisfaction, the old-fashioned globular glass pessary. This may have to be done, and even repeated, weeks before the tense parts are sufficiently softened and stretched for the operation. In bad cases of cicatricial contraction, it constitutes an indispensable preparatory treatment. Often, however, the cutting of these bands can be postponed to the time of the actual operation, for the fistula itself will close up by first intention before these open granulating wounds can heal over. In cases of transverse fistulæ whose edges cannot be brought together, Courty relaxes the longitudinal tension of the vagina by a semi-circular incision around the upper half of the meatus urinarius, and by permanent traction on the cervix uteri, made by a wire passed through its hind lip and fastened to a piece of cork-wood laid across the vulva.

When the neck of a funnel-shaped fistula is not to be reached, or when a fistula lies in a funnel-shaped hollow of the vagina which cannot be exposed, a ribbon of the surrounding tissue may be removed, and the raw surfaces sewed together by overstitching.

A fistula involving the cervix uteri, as in a vesico-utero-

vaginal fistula, or one lying very close to the cervix, and consequently, having a lack of yielding tissue around it, is by no means easily cured. The best way to overcome the difficulty is to slit the cervix bilaterally to the vaginal junction, denude the fore-lip, and unite it to the lower edge of the fistula. By this treatment, although the cervix is deformed and may give such future trouble as a lacerated cervix will, the woman is not deprived of her capability of procreating. If, however, closure of the fistula in this manner cannot be effected, a strip of vaginal surface behind the cervix must be denuded and united to the freshened free edge of the fistula. The cervix will thus be turned into the bladder, and the woman will thereafter menstruate into that viscus, and of course remain sterile.

If an opening exists between the bladder and the womb, as in a vesico-uterine fistula, a probe should be passed in to find out how high up the supra-vaginal portion of the cervix uteri the fistula lies. If it does not lie too high above the vaginal insertion, the cervix should be slit up to the fistula itself, which is then to be pared and closed by deep cervical stitches. The wound in the cervix will next be sewed up, as in the operation for laceration of the cervix. If the fistula cannot be reached, the cervical canal must be pared and closed up. The woman will thereafter menstruate into the bladder through the fistula, and remain sterile. In one case, however, after such an operation, pregnancy took place. It was accounted for on the supposition that one of the suture-tracks did not immediately close up. The surgeon, J. R. Lane, thinking that the enlargement of the womb was due to retained menstrual fluid, re-opened the cervical canal. The woman aborted of a four months' foetus, and was afterwards cured by a repetition of the operation.

There is another class of uro-genital fistulæ about which, although rare, you will need to know something. I refer to that in which one ureter is involved, while the bladder escapes. It comprises two varieties; the uretero-vaginal and the uretero-uterine. The ureters, after entering the pelvis,

converge towards the cervix uteri, and at points about an inch in front of the external os uteri, and from half an inch to three-quarters of an inch to either side of it, reach the outside of the bladder-wall. After running a short distance between the vagina and the bladder, they pierce the latter in an oblique direction. It is at these points in the right and the left anterior cul-de-sac of the vagina that uretero-vaginal fistulæ are found. Still more rare are the uretero-uterine fistulæ. They can take place only by the prolongation of a cervical tear into the vagina as far as the ureter.

Fistulæ of the ureters are, however, more frequently the result of an operation for a vesico-vaginal fistula involving the mouth of one ureter. They are recognized by the secretion of one kidney being evacuated naturally, and that of the other kidney through the vagina. Also the probe introduced into the fistula will not go into the bladder, but pass up towards the kidney, and further, milk thrown into the bladder will not discolor the dribbling urine. Then again, if the opening in the cervix or in the vagina be temporarily plugged up by a sponge-tent, or be closed up by a stitch, pain will be felt in one kidney, and all the symptoms of hydronephrosis, or occlusion of the ureter, will present themselves. These fistulæ are extremely hard to treat. Their cure depends, as my friend, Prof. Theophilus Parvin, has practically pointed out, upon the formation in the bladder of a new mouth for the ureter, and upon closing up the fistula without encroaching upon the lumen of the ureter. By making with a trocar a new channel into the bladder for the ureter, and by paring merely the mucous surface of the vagina, together with a portion of the fore-lip of the womb, he gained the honor of recording the first case of cure.*

If, during the course of an ordinary operation for a vesico-vaginal fistula, little jets of urine are seen to come from the edge of the wound, it is plain that the mouth of one ureter is involved, and will be in danger either of occlusion, or of forming its own fistula. To avoid this accident, the mouth of the

* *The Western Journal of Medicine*, Vol. II., 1867, p. 609.

ureter should be slit up for half an inch inside of the bladder, or a V-shaped piece should be taken out, so as to place it above the grasp of the sutures, and the latter be passed as carefully as possible between the ureter and the vagina.

Sometimes a fistula of one ureter is congenital. When the bladder is wanting or is rudimentary, one ureter, or both of them, will open into the umbilicus, or the rectum, or the vagina, or into the urethra. Sometimes, although the bladder may be naturally developed, one ureter will go astray and end in the vagina, or very near to the meatus urinarius. The symptoms will be precisely like those previously described. The best paper on the subject is one by Dr. W. H. Baker, of Boston, who met with an example* in which the ureter ended two lines below and to the left of the meatus urinarius. He cured his patient by the following ingenious operation:

“With a probe in this canal, a Sims’s speculum exposing the vagina, an incision was made through the vaginal membrane down upon the probe, one inch and a half from the meatus, and it was then found that, instead of cutting into a fistulous tract, we had opened a ureter, from which the urine now flowed drop by drop, as it had from the minute orifice by the side of the meatus. A uterine probe could now be passed seven inches, which was the length of the instrument, up the course of the left ureter. From the point of incision this ureter was now easily dissected out, which was done for a little more than an inch inward and a portion of the way outward. It was then decided to turn the course of the ureter into the bladder as near the point where it should have gone as possible. Dissecting up the vaginal membrane to the left of the median line at a point one inch from the internal orifice of the urethra, the bladder was punctured; the ureter was then cut off, enough being left to go through the thickness of the bladder, that the tension might not be too great upon the ureter. The edge of the ureter was then stitched to the lining membrane of the bladder all around the incision through that viscus; the stitches used (being the only ones at hand) were strong cotton threads, which were cut off short and left to ulcerate into the bladder. The vaginal wound was then closed over the whole, the edges of its membrane being brought together by five silver sutures. A uterine probe being then passed through the urethra into the bladder, could be conducted several inches up the ureter. . . . The urine was then drawn off every four hours for several days, then every six hours, until the eighth day after the operation, when the silver sutures being removed, the line of union

**New York Medical Journal*, December, 1878, p. 578.

being perfect, she was allowed to pass her water naturally. From May 22d to May 29th, four of the short cotton stitches, coated with phosphatic deposit, were noticed in the water returned from the bladder, and it was judged that the two remaining had passed unobserved."

Whenever it is impossible to cure a large urinary fistula, provided it is not involving a ureter, we are warranted in closing up the vagina, either by transverse obliteration as high up as possible, or, if that cannot be done, by longitudinal obliteration at the vulva. The former is the better plan, because it leaves a smaller reservoir for residual urine, and does not hinder sexual intercourse. It should always be done when possible. A circular strip of mucous membrane is dissected off from the vagina, and the raw surfaces are brought together transversely by interrupted metallic sutures. The vulva is closed by prolonging upward, until they meet under the urethra, the wings of the raw surface made for the restoration of a torn perineum. These operations should not be undertaken, unless the fistula is large enough to allow free inter-communication between the natural and the artificial reservoir. For incurable fistulæ of the ureter the corresponding kidney has very successfully removed by Simon, Zweifel, Czerny and Crédé,* and also by Fritsch.†

RECTO-VAGINAL FISTULÆ.

Fistulous tracts between the vagina and the rectum are not so common as those between the vagina and the bladder. Neither are they so annoying to the woman, because the act of defecation is not one constantly going on like the secretion of urine. The greatest inconvenience is the involuntary escape of wind and of fluid feces from the bowel into the vagina. Recto-vaginal fistulæ come from the pressure-sloughs and the lacerations to which the vagina is liable during a difficult labor. They come also from abscesses and fever-sores of the recto-vaginal septum, and especially from the ulceration produced by hard feces accumulating and retained *below*—not

* *Annales De Gynecologie*, November, 1882, p. 382.

† *American Journal of Obstetrics*, November, 1886, p. 1221.

above—a stricture of the rectum. Occasionally, after the operation for restoring a ruptured perineum, an ununited portion of the wound just above the sphincter will form a fistula. There are several different ways of closing them, and it is well to have each one at one's finger-ends, because the operation, however skillfully performed, is liable to fail.

One operation consists in treating the fistula precisely like a vesico-vaginal fistula—that is, to bevel its edges from the vagina, and introduce interrupted metallic sutures.

A second is to bevel the edges from the rectum, and introduce the sutures from the rectum side.

A third is to bevel both vaginal and rectal margins, and to put in two sets of interrupted sutures, the one vaginal, the other rectal. In order to avoid the trouble and the pain of removing the rectal sutures, I prefer them to be of fine gut. After paralyzing the sphincter ani by overstretching, and by the use of the duck-bill speculum, the fistula can very generally be reached from the rectum.

By a fourth method, and a very good one it is, the recto-vaginal septum is split at the rim of the fistula, and the two sets of opposing flaps are united by rectal and vaginal sutures.

In the fifth, which I can highly recommend, a shallow cut is made around the vaginal mouth of the fistula, about half an inch away from it, and the mucous membrane is dissected up to its rim in a frill. This is next inverted and pushed into the rectum through the opening, which is now closed by rectal and vaginal stitches—the former uniting the raw surfaces of the frill, the latter the raw strip around the vaginal rim of the fistula. Should the opening into the rectum be too high up to be reached, the rectal stitches can be passed *per vaginam* in the following manner: Before the mucous frill has been inverted, metallic sutures are passed through its edges, each end of each one entering the raw surface and emerging on the mucous surface. The free ends of the wires are next secured temporarily by twisting them over a perforated shot. After all these sutures have been passed, the shot are pushed through the fistula into the rectum and out

through the anus, and the frill is inverted by traction on them. The shot are then run up one by one to the rectal wound and clamped, and the operation is completed by sewing up the vaginal wound.

In each one of these five operations, the sphincter ani should first be paralyzed by overstretching, and the bowels afterwards kept bound for one week. This has hitherto been my own plan; but there are not wanting surgeons who advise a daily evacuation of the bowels, and I am by no means sure that they are not right.

Perineo-vaginal fistulæ and blind fistulæ of the labia or of the vagina, need to detain us but a moment. They should be so dilated or so cut open as to admit of free cauterization, either with a red-hot uterine sound or with nitric acid. Some I have cured by the oil of turpentine, or by a saturated ethereal tincture of iodine injected into the sinus by means of a hypodermic syringe. If these means fail, the sides of the fistula must be pared and sutures put in. One recto-labial fistula which resisted all other plans of treatment, I cured by the elastic ligature. But all operations laying open the whole fistulous tract are to be avoided, because they are liable to weaken the perineum and disable the sphincter ani. For this reason, after any one of these fistulæ has been laid open, its lining membrane should be carefully dissected out with the knife, or be burned off by the thermo-cautery, and the wound at once closed by deep and superficial sutures. This is the very best treatment for anal fistulæ, whether in the male or the female.

As an anal fissure is very common in women, it should always be searched for. It usually can be readily seen by inverting the rectal mucous membrane by a finger in the vagina. Overstretching the sphincter ani is probably the most certain way of curing it.

LESSON VI.

CLOSURE OF THE VULVA FOR INCURABLE VESICO-VAGINAL FISTULA—TUMORS OF THE VULVA.

CLOSURE OF THE VULVA.

THE first patient brought before you is the one that served as the text of my lecture on vesico-vaginal fistula. She was operated upon three weeks ago to-day, and the stitches were cut on the eighth day. Each one held its own, and the wound has united at every point. I attribute my success this time wholly to the improved condition of her health. Her flesh was, therefore, firmer in texture, and more ready to heal. She is not yet able to hold her water longer than two hours; but day by day the bladder walls will stretch more and more, until the natural tolerance is attained. She has been cured of a distressing infirmity, and goes home very happy. Such results make one proud of one's profession.

Our next case is a very sad one, because it lies beyond the reach of reparative surgery. All that can be done for her is to make her infirmity more bearable. Fourteen years ago this woman went into her first labor. The arm presented, and, as she lived on a farm many miles from her physician, by the time that he arrived, the shoulder had become so tightly jammed into the pelvis that version could not be performed. He sent for a friend, who, after repeated trials, also failed. As ether could not be procured without very great delay, and as there seemed to be a tendency to spontaneous evolution, they waited for the natural delivery of the child. This ultimately took place very unexpectedly; but, as the result of long-continued pressure, extensive sloughing followed. The whole base of the bladder, and a large part of the urethra, have been destroyed; while all that is left of the vagina is a

short, jagged and gristly hole, which will not admit my index finger. Since that time she has suffered so much from the excoriation of her person, caused by the constantly dribbling urine, as to become an opium-eater. You can see for yourselves how the skin resents the intrusion of the urine, and yet it by no means looks so angry as when she first came into my hands. It was then raw in patches and incrustated with the lime-salts of the urine; but applications of a stiff oxide of zinc ointment, and repeated lotions and vaginal injections of strong alum water, have done much good.

The relation of the parts has become so much disturbed by cicatricial contraction, that I have not yet been able to discover exactly where the womb lies. It undoubtedly exists, for she has twice menstruated during the past thirteen years; but it has probably been turned into the bladder, or been so matted in dense structures as to elude my search. It has also most likely taken on atrophy, and become functionally destroyed. This is a curious fact which I am sure often takes place; for twice under like circumstances, after a prolonged search under ether, I found an infantile womb. Nor can I otherwise explain the infrequent menstruation, and even amenorrhœa, which so commonly attend the presence of a vesico-vaginal fistula. Perhaps the severe injury which the reproductive apparatus has sustained stuns it and stunts it; or perhaps the dribbling of urine over these sensitive structures quenches all sexual desire. At any rate, a woman with a hole in her bladder is unfit for the marriage relations; and, from this point of view, it is, perhaps, a fortunate circumstance that our patient's husband died very shortly after her delivery.

She has consulted many surgeons and specialists—she tells me that I am the eighteenth—but they all shook their heads over the case, for it was plain enough that there was no chance whatever of closing up the fistula, and of making a new urethra. Since there is no urethra, and not vaginal tissue enough left to come together, transverse obliteration of the vagina is out of question. I thought, however, that if a per-

manent opening were made through the recto-vaginal septum into the rectum, I might safely close up the vulva and the mere urethral ring, and convert the lower bowel into a bladder. I was emboldened to recommend this step, because a very analogous operation had succeeded in the hands of my friend, Dr. W. W. Keen. His patient had an incurable vesico-vaginal and recto-vaginal fistula, as sequels to the sloughing sores of typhoid fever. I helped him to close up the vulva, and he has since told me that she is now able to hold her urine in the rectum for hours before voiding it. So, by means of the galvano-caustic loop, I burnt a hole through the vagina into the rectum, making an artificial recto-vaginal fistula. This was done some weeks ago, and since there now appears to be no danger of its healing up, I purpose to-day to close up the vulva.

I begin by shaving off the hair from each side of the vulva where I intend to put in my stitches. The hair removed, I at once set to work snipping off the skin and the mucous membrane with a pair of curved scissors, beginning below so that the parts may not be obscured by the blood. Every now and then a little artery spurts, which I at once secure with a *serre-fine*. Scissors do not always behave well under these circumstances; their edges may not be perfectly true; still I prefer their half-crushing action to that of the knife. They do away with a great deal of bleeding. Here let me give you a hint about scissors which few physicians know, and which, to my cost, some instrument-makers forget or overlook. The thumb always tends to push the ring of its blade away from the palm of the hand, and the finger to draw its ring towards the palm. Hence, to keep the cutting edges in close contact, the finger blade should invariably ride the thumb blade.

While talking, I have carefully snipped off the skin and mucous membrane well into the vagina on each side. I make the assistants relax their hold every now and then, so that I may fit the sides accurately together. At the entrance of the meatus the dissection must be done with caution, for should

any of the veins of the bulbs be cut, very annoying bleeding might ensue. Having pared off all the mucous membrane needful on each side, I am ready to put in the sutures. I first, however, cut off these "aprons," the nymphæ, for they are no longer of use, and will only interfere with the accurate healing of the sides. I put my first suture in on a level with the upper margin of the anus, and pass it out at the other side with one sweep. The other stitches will come out at the edge of the denuded vaginal surface. These sutures must include tissue enough to prevent them from tearing out. To attain this end I thrust the needle straight back at first, and then direct its point towards the vagina. At the last stitch, that nearest the symphysis pubis, I have again passed my needle all the way round with one sweep. The greatest difficulty always is to make the points of exit and of entrance of the sutures exactly opposite. Before tightening each suture, I syringe out the part carefully, so as to wash away all the urine from the surface of the wound. In fastening the sutures I use shot, and, for security, two of them for each of the lower stitches. All the sutures are now clamped, and a flexible catheter will be passed through the anus and fistula into the woman's bladder. The patient's knees will now be bound together, and opium enough must be administered to lull the pain, and to lock up the bowels for eight or nine days. Before binding the knees together, a pad will be placed between them.

It is four weeks to-day since I closed the vulva of this patient; and I bring her again before you to show the result. When the stitches were removed on the ninth day, the union was found complete, except at the site of the meatus urinaris. I attributed the existence of this opening to the fact that, underrating the strength of the sphincter ani, I had used a flexible tube instead of a silver catheter, to drain off the urine, and that the contractions of the anal muscles had so compressed and closed the softened tube, as to force the urine to find other means of egress, which it did by working

out its way just below the symphysis. A few days later I closed this fistulous opening, by dissecting up a raw frill all around it, and turning it into the opening. This was successful, and I am happy to say that the woman now gets up only twice during the night to make water. At first, the rectum resented the intrusion of the urine, and she had an evacuation of her bowels every "seven minutes," as she declared; but now she goes to stool but once every two hours during the day-time.

To-day I intend to remove two internal piles which are greatly annoying her. Were I to snip them off, my patient would probably bleed to death; so I shall tie them. It is customary to transfix the stem of a pile and then tie it on both sides, but I shall cut a little groove in the skin and tie a thread around the stem without transfixing it. For this purpose I am in the habit of using English plaited thread of three strands. All the blood vessels enter a pile from its upper margin. Nicks and grooves in which the thread is to be lodged can, therefore, be cut in the lower side with impunity. Here is another surface pile which can be cut off without tying. There is only a little bleeding; to stop this I shall cauterize the stump.

Of course this woman, fortunately a widow, will have to remain single for the rest of her life. Her reproductive organs are of no use whatever. In spite, however, of this condition, the patient's mental and moral condition has been vastly improved by the operation. If her rectum should at any time begin to show signs of persistent and irremediable irritation, there would be nothing left for me to do but to reopen the vulva and close up the recto-vaginal opening. From the present favorable symptoms, I hope that nothing of the sort will ever be necessary.*

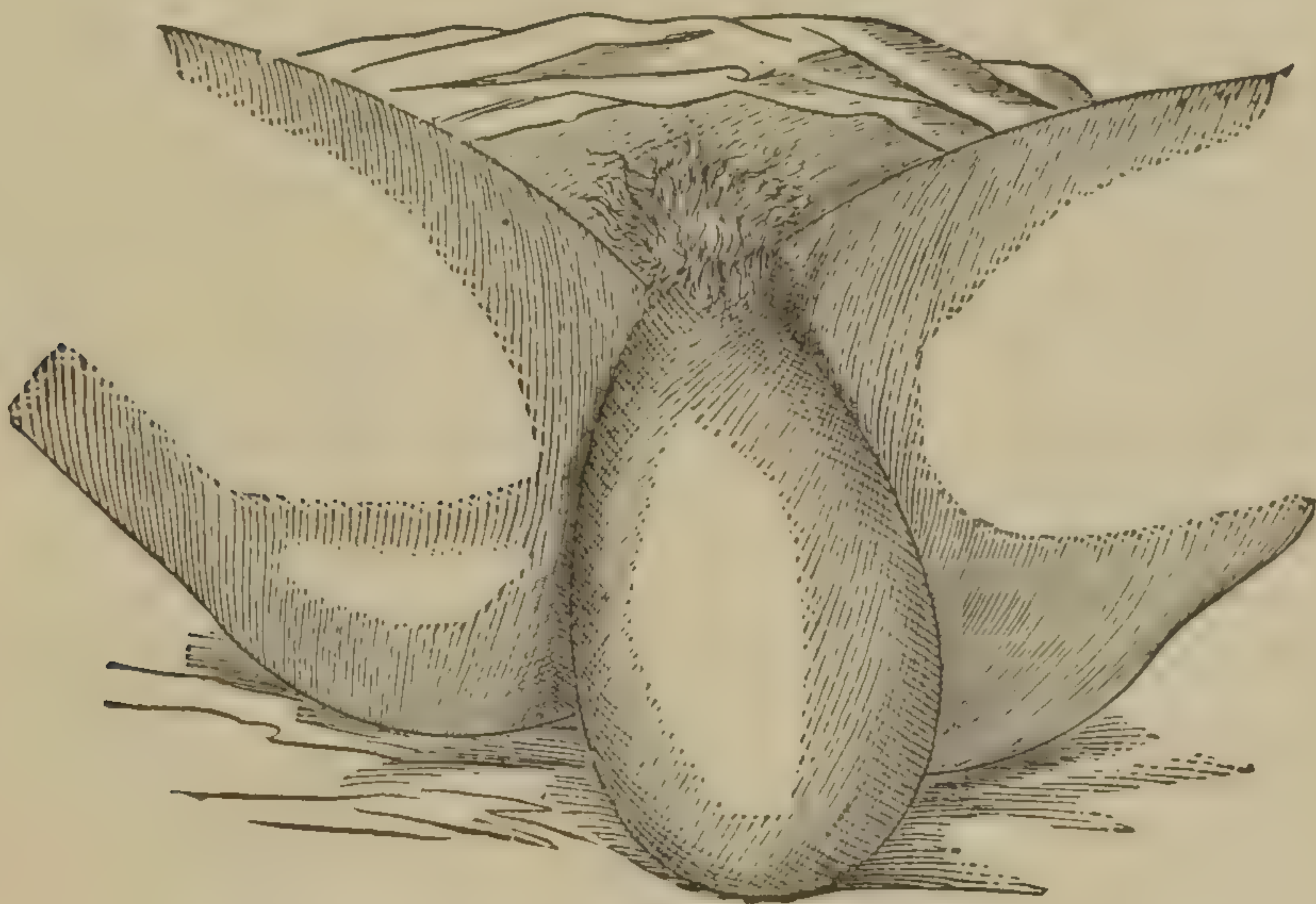
*Until Dr. T. Parvin, in his kind review of the second edition of this book, published in the *Am. Journal of Med. Sciences* in Oct., 1879, had pointed out that Maisonneuve had anticipated me in 1851, I supposed that I was the first to make an artificial recto-vaginal fistula and close the vulva.

Prof. Morisani of Naples, has lately performed the same operation with

TUMORS OF THE VULVA.

The woman who has just been wheeled in on the operating table is afflicted by two growths, one of which is quite rare. As I expose her abdomen you see how enlarged it is by some bosselated tumor. It is a very large fibroid tumor of the womb, and of stony hardness. It gives her very little trouble, however, and I therefore shall have nothing to do with it to-day. But as I uncover her thighs you see that her vulva is wholly concealed by a very large tumor of the left labium majus. It reaches, when she stands up, as far as her knee. It is by far the largest tumor of this region that I have ever seen, and I have, therefore, had it sketched (Fig. 25) by an artist.

FIG. 25.



ADIPOSE TUMOR OF LEFT LABIUM.

Upon my first examination of it, fluctuation seemed so sure, that I pronounced it to be a cystic tumor containing

success (*Archives de Tocologie*, August, 1879, p. 506), and so has Dr. Géza Antal, *Medical Times and Gazette*, March 12, 1881.

I have since closed the vulva very successfully in a girl in whom existed a recto-vaginal and an incurable vesico-vaginal fistula following labor. Thrice, in vain efforts to discover the womb, I got into the recto-uterine pouch, and touched the ovaries, but with no other bad results than a febrile movement which lasted merely for two days.

fluid, and in this diagnosis I had the concurrence of two of my colleagues. But the exploratory plunge of an aspirator-needle resulted in a dry tapping, and I have come to the conclusion that it is an adipose tumor. Each labium majus consists of a fold of integument, cutaneous externally and mucous internally, which passes down from the mons veneris to meet its fellow at the fourchette. Each labium, being the analogue of half the scrotum, contains within itself a sac formed of fibro-elastic tissue, which starts from each abdominal ring and extends down to the fourchette. These sacs are filled with adipose tissue, which gives symmetry to the part, unless, as in this case, it takes on abnormal growth.

Tumors of the vulva are either cystic or solid. The cystic ones are of two kinds. One is a serous cyst of the labium; the other a retention cyst, or dilatation of one of the vulvo-vaginal glands, which are also called the glands of Bartholin or of Duverney. They lie on either side of the vulvar entrance, and their ducts open in front of the hymen or of its remnants. These glands, by the way, secrete a lubricating fluid, which being occasionally ejaculated in jets during the sexual orgasm, gave rise to the ancient belief in the existence of two "seeds," the one male, the other female. Examples of each kind of cyst I have brought before you, and one of them, you will remember, was caused by occlusion of the duct of the left vulvo-vaginal gland from an operation for lacerated perineum. They are cured, sometimes by emptying the cysts with an aspirator or with a hypodermic syringe, and by injecting them with a strong tincture of iodine; sometimes by laying them open from their mucous surface, cauterizing them thoroughly with the silver nitrate, and packing the cavity with oakum. Dissecting the sac out is a bloody operation, and fortunately is rarely needful. In this operation, the cyst should be removed entire, if possible, as fragments left behind are liable to reproduce the disease. Union by first intention should be aimed at by deep wire sutures, but a small drainage-tube in the lower angle of the wound must not be omitted.

The solid tumors of the vulva are also of two kinds, either fibrous in structure or adipose, the former being perhaps the more frequent. The growth-rate of the fibroid tumors is slow, and they give but little annoyance except from their bulk. Sometimes, like analogous tumors of the womb, they contain calcareous plates. They always tend from gravity to lengthen out the portion of the labium in which they are imbedded, and to become pedunculated. Twice have I seen the connecting stalk over an inch in length, and not thicker than my little finger. It is, therefore, well to avoid hasty surgical interference, so as to give them time to become pedunculated. The chain, or the wire-ecraseur, will then safely remove them. If the pedicle be thick, it may be transfixed by a bistoury, and each half crushed through separately. But adipose tumors do not behave in this way. They merely distend the sac, and do not become pedunculated, but assume a pyriform shape like this one. Hence they are removable only by careful dissection.

Seizing the growth, I make an S-shaped incision from its neck to its base. This gives me more working room, for a double-curved cut is longer than a straight one. With the handle of my knife and with my finger nails, I am now rapidly dissecting it away from its bed in the sac, and I find that it is an adipose tumor. With an occasional nick of my knife, I shell it out more and more, until now I have reached its stem, if I may so call it. But this appears to be so firmly attached to the pubic bone, and is so dense and possibly vascular, that I shall sever it with the wire-ecraseur. You can now see what a large tumor it is, and as I tap it with my finger, while it lies on my hand, I get an impulse-wave very like that of fluctuation. The feeling is so deceptive a one, that I really cannot blame myself for making the error of diagnosis at my first examinations. The operation has proved comparatively a bloodless one. Very few vessels need tying. As my hour is nearly over, I shall leisurely close up this large wound in my private room, taking good care to leave a good-sized drainage opening in the lower angle.

But, one word in regard to tumors of the clitoris. These are usually either cancerous or syphilitic, and should be removed by the galvano-caustic loop. There is also another tumor of the vulva which you will occasionally meet with in pregnant women, and that is a hypertrophy of one of the *carunculæ myrtiformes*. I have seen one so long as to project from the vulva, and so bulky as to interfere with the progress of labor. It is not necessarily a syphilitic vegetation, as the abnormal growths at this site usually are; but a non-specific growth, produced by the vascularity of the parts. Do not cut it off, but wait for its absorption during child-bed. It usually disappears then; but if not, you may remove it.

True syphilitic vegetations of the vulva can be cured by dusting them with calomel, or by touching them with chromic acid, or with fuming nitric acid; but they are quickest dealt with by removal with the knife or the scissors. Let me, however, warn you against performing at your office this, or any other cutting operation upon the cervix or the vaginal tract. A smart hemorrhage is pretty sure to follow, either then and there, or else after the ride home; but, with your patient in bed, you can always control it by astringents or by the tampon. I shall not soon forget a scrape of this kind I once got into, by snipping off several clumps of venereal warts—I have been shy of them ever since—from the vagina of an office-patient. The bleeding resisted every astringent within reach, and as she resisted harsher remedies, I was glad enough to be able to staunch it with a tampon. What with the fright and the pain, there was no getting my patient home; she lay on my sofa the better part of a day; and that, to say the least, was not agreeable.

LESSON VII.

SOME AFFECTIONS OF THE VULVA AND OF THE SURROUNDING PARTS.

PRURITUS VULVÆ.

A VERY distressing and a very troublesome complaint, which you will have abundant opportunities of witnessing in this clinic, is an intense itching and tingling and burning of the external organs of generation. The seat of the itching seems to be variable, but the irritation is usually worst at some fixed spot, such as the fourchette, the nymphæ, or the parts about the clitoris. Sometimes, however, it is more deeply situated, as within the vagina. Sometimes it is purely neurotic in character—a sheer nervous affection of the skin. More frequently it is merely a symptom of some disease of the genito-urinary apparatus, usually with acrid discharges. Then again, it is of a mixed character, being partly idiopathic and partly symptomatic. Yet whether primary or whether secondary, the discomfort is equally unbearable. There is, indeed, no peripheral disease which exercises so great an influence upon the mental condition of the patient as this one. The itching compels scratching, and the scratching abrades the skin and intensifies the itching. Usually the irritation is worse at night. This is owing partly to the heat of the bed-clothes, and partly to the lack of mental pre-occupation. Often the irresistible desire to scratch and to rub her person debars the woman from going into society. Loss of sleep and seclusion then bring on brooding. She grows despondent, and irritable, and morbid; sometimes, indeed, she becomes insane.

Pruritus vulvæ is often present in pregnancy. It is then either essentially neurotic; for I have seen it affect the thighs

and the whole abdomen, as well as the vulva; or it comes from the vivid congestion of the generative organs during the earlier months; or else it is due to the irritating discharges from the vagina, which are so common during the latter months of gestation.

In fact, any kind of acrid uterine or vaginal discharge will cause burning and tingling and itching of the vulvar region. Few women, therefore, have passed through life without attacks of pruritus. But these attacks during menstrual life are usually ephemeral and manageable. Not so with those after the climacteric, for there is then a hardly appreciable yet very acrid leucorrhœa—senile leucorrhœa we call it—which often causes a very annoying and stubborn pruritus. I really cannot conceive of any woman so unhappy as the one who is the victim of this disorder.

Uncleanliness, gonorrhœa, secondary syphilis, all local eruptions, cancer of the womb, rectal disorders, ascarides and pediculi, have been the causes. Pruritus vulvæ is so commonly associated with diabetes, that its presence should lead to an examination of the urine for sugar. It is probable that the local irritation here is due partly to neurosis, and partly to contact with the sugar of the urine; for Thomas has pointed out that the use of the catheter greatly lessens the itching in a certain number of cases.

In the treatment of this disease we should always strive to discover the cause. Often this is obscure, and, even when found, we have, at any rate, to treat the itching by itself as an entity apart from the cause.

So intractable is this disease that it is well to have a list of approved formulæ for the exacting symptom of itching. Three domestic remedies of value may first be tried. With water as hot as can be borne, the vagina should be syringed out, and the external genitals bathed several times a day. Striking the external genitals with a sponge wrung out of boiling water, will frequently give the greatest relief. An infusion of tobacco, one ounce to the quart of boiling water, may next be applied in the same manner. This failing, the

itching parts can often with advantage be washed with cider vinegar, either diluted or of full strength. Decoctions of walnut leaves, of flaxseed, of quince seed, of slippery-elm bark, or of sassafras pith, are very soothing remedies, if not positively curative. These applications may be medicated with the zinc sulphate, lead acetate, or with borax.

The following formulæ have been prescribed by me with great benefit. Some of them are, my own, others are the gleanings of years, and are without ownership so far as I know, excepting the first, for which I am indebted to Dr. H. Z. Gill, of Jerseyville, Ill:

R. Aluminii nitratis, Aquæ destillatæ, S.—Apply with a soft sponge.	gr.vj. f. 3j.	M.
R. Iodoformi, Balsami peruviani, S.—Smear the parts with a brush.	3j. f. 3j.	M.
R. Chlorali, Camphoræ, Rub these into an oil; then add Unguenti simplicis, Pulv. acidi borici, S.—Apply with a brush.	aa f. 3 iv. 3j. 5iv.	M,
R. Acidi acetici, Glycerinæ, S.—Apply locally.	f. 3j. f. 3iij.	M.
R. Acidi carbolicæ, Morphiæ acetatis, Acidi hydrocyanici diluti, Glycerinæ, Aquam, ad S.—Apply locally.	gr.xij. gr.viij. f. 3ij . f. 3j. f 3iv.	M.
R. Unguenti hydrargyri nitratis, Olei morrhuæ, S.—Anoint the parts twice daily.	aa 3j.	M.
R. Chloroformi, Olei amygdalæ expressi, S.—Apply to the itching parts.	f3j. f. 3viij.	M.
R. Sodii boratis, Morphiæ muriatis, Acidi hydrocyanici diluti, Glycerinæ, Aquam rosæ, ad S.—Apply with a soft sponge.	3 ij. gr.xx. f. 3j. f. 3j. f. 3 viij.	M.

R. Potassii cyanidi, Liquoris calcis, Adipis,	gr. j-iiij. f. 3 iv. 3 iv.	M.
S.—Apply locally.		
R. Cocaine hydrochloratis, Unguenti petrolei,	gr. iv-vj. 3 j.	M.
R. Sodii bisulphitis, Aquaë,	3 vj. f. 3 vj.	M.
S.—Apply with a soft sponge.		
R. Hydrargyri chloridi corrosivi, Pulveris aluminis, Amyli, Aquaë,	gr. j. gr. xx. 3 iss. f. 3 vj.	M.
S.—Apply locally.		

Vaginal suppositories containing boric acid and bismuth will often do much good. In desperate cases electricity may be applied directly to the itching vulva and vagina; or the parts may be cauterized with the solid stick of the silver nitrate. Very recently, good effects have been reported from repeated hypodermic injections into the most itching points, of from fifteen to twenty-five minims of a two per cent. solution of carbolic acid.* In every case it is well to keep the labia apart by a pledget of lint soaked in one of the preceding lotions. When it is clear that the pruritus depends upon a uterine secretion, such as a senile leucorrhœa, the discharges should be neutralized before they reach the vulva. This is best done by dipping a tampon of cotton-wool into a medicated glycerole, such as that of tannin, of boric acid, of morphia, of lead, or of zinc, and pushing it up against the cervix. Scanzoni uses for this purpose a tampon of cotton-wool, thoroughly sprinkled with equal parts of finely powdered sugar and alum. To secure sleep potassium bromide, chloral or opiates, in full doses, must be resorted to. When due to diabetes, the itching will be greatly relieved by fifteen-grain doses of sodium salicylate given by the mouth in glycerine every four hours. For this valuable remedy I am indebted to Dr. James Simpson, of Philadelphia, who first brought it to my attention.

* *Dublin Medical Journal*, 1879, p. 206.

When pediculi or other insects are the cause of the pruritus, there is no surer remedy than a liniment composed of one part of carbolic acid and nine of sweet oil.

COCCYGODYNIA.

The name coccygodynia is derived from coccyx and *ὀδύνη*, pain. The distinguishing symptom of this disease is a very sharp or throbbing pain in and about the sacro-coccygeal joint. This pain is always evoked whenever pressure is made on the tip of the coccyx, or whenever motion is communicated to the bone itself.

From the diagram of the female perineum (Fig. 26), it will be seen that to the coccyx are attached most of the perineal muscles, together with slips from the glutei muscles. Such movements then of the body as produce contraction of these muscles will cause acute pain in a diseased or an hyperæsthetic coccyx. Walking, therefore, very generally increases this pain, but above all do the acts of sitting down and of rising up. Since the anal sphincters take their origin from the tip of the coccyx, the pain is often most acute during the act of defecation. This fact often leads the practitioner astray, for he naturally attributes this symptom either to an angry pile, to an anal fissure, or to a prolapsed ovary. The diagnosis can be made out by catching the coccyx between the fore-finger in the rectum and the thumb on the outside. Any movement communicated to it will then elicit very acute suffering.

This disease has often a traumatic origin, and it then can be traced up to some injury received by the coccyx. For instance, as woman advances in age, the sacro-coccygeal joint becomes ankylosed. Now, if late in life she becomes pregnant, the ankylosis must give way during child-birth. I have more than once heard in labor this joint snap with a sound so loud as to be heard at some distance from the bed. Then again, even where no ankylosis exists, the anterior coccygeal ligament may be overstretched, and perhaps torn across, by the passage of a large head. In fact, many women date their coccygodynia from some labor. But it is not from par-

turition alone that the sacro-coccygeal articulation receives injury. One of the worst cases of this disease that I ever saw was brought about by a sudden fall. At a merry-making, some one in jest pulled away the chair on which the lady was about to sit, and she came violently down upon her seat. The origin in another of my cases was referred to the sudden jump of a horse on which my patient was riding. Sometimes the coccygodynia is merely a reflex symptom of some anal or some uterine lesion. I am, moreover, sure that this form of pain is often essentially neurotic, far more so, indeed, than is generally supposed—and that the coccygeal joint is as liable to become hysterical as the knee-joint, or the other articulations. Further, just as an hysterical joint will mimic all the tokens of some local injury, so will the hysterical coccyx. The diagnosis between the traumatic disease and the nerve disease—between the genuine lesion and its counterfeit—is not easy, sometimes very perplexing. I shall not soon forget a case of very acute local suffering, referred by the lady to injuries sustained in horseback exercise, which turned out to be hysterical, and eventually got well. Yet I was so imposed upon as to decide upon the removal of the coccyx, and had even gone so far as to fix the day for the operation, before this protean malady had dropped the mask and revealed itself. The only way of making this important distinction is to note the irregularity of the pain in the hysterical affection, an indescribable affectation of suffering, and the lack of consistency in the behavior of the symptoms.

The treatment of this disorder will of course vary with the cause, which must always be searched for. The hysterical affection is best treated by rest, massage and electricity, as will be explained in a future lesson on nerve-exhaustion.

All anal and uterine lesions must be remedied. Should no good follow, local hypodermic injections of morphia, of cocaine or of carbolic acid may be tried; and so also may rectal suppositories of iodoform. Some cases will in time get well spontaneously. Then again there are others which resist all treatment, whether, local or constitutional. In the latter the

suffering may demand surgical interference. This can be afforded in two ways. By one way, a tenotomy knife is passed in near the tip of the coccyx, and carried up to the articulation. It is then made to shave off from the bone all its muscular and tendinous attachments. Thomas recommends that, whenever there is difficulty in performing subcutaneous tenotomy in this region, an incision be made down upon the coccyx. The exposed tip is then lifted by the finger, while the attachments are snipped off on every side by a pair of curved scissors. By the other way, the coccyx is cut down upon, separated from its attachments, and extirpated by disarticulation, either with the knife or the bone-forceps. I have repeatedly performed this operation, and with great benefit. Deep sutures, buried in the wound, will secure complete co-aptation, and obviate the need of drainage. Very little bleeding attends any of these operations, but the radical one is the more effectual, because, when only tenotomy is performed, the nerves usually re-unite, and the pain returns.

*HERNIA OF THE LABIUM MAJUS, OR PUDENDAL
HERNIA.*

In about three per cent. of the cases of inguinal hernia in woman, the bowel descends into the labium, which, as has been stated, represents one pouch of the scrotum. Even the womb and the ovaries have been found in this place. In one instance I discovered in the distended labium of a young married lady an ovary, a portion of omentum, and a loop of intestine. The escape of these organs from the abdominal cavity takes place through an unobliterated foetal opening, called the canal of Nuck. Through this canal it is that the round ligament of the womb, like the spermatic cord of the male, passes, and then loses itself within the labium.

The diagnosis of a hernia of the labium is easy enough when the mass can be returned by taxis and position, but difficult when the tumor is irreducible. One would *a priori* suppose that a clear percussion note, and the impulse communicated to the hernia by coughing, would clear up any

obscurity. Yet resonance on percussion is not always elicited, and coughing will convey an impulse to a cyst of the labium which also yields an airy feeling. For these reasons, I have, on several occasions, been quite puzzled to tell a cyst in that region from a hernia. I think, however, that it is always easier to tell a hernia from a cyst, than a cyst from a hernia.

The treatment is like that of an inguinal hernia. The hernia is reduced by taxis and position, and the inguinal canal and that of Nuck closed by the pressure of an appropriate truss. In obstinate cases, I should be tempted to perform an operation, looking to the permanent obliteration of this canal.

ENCYSTED HYDROCELE OF THE ROUND LIGAMENT.

This affection is analogous to the encysted hydrocele of the cord in the male, and consists of a collection of fluid in a serous sac around the round ligament. It should be termed Hydrocele of Nuck's Canal. It is due, as in the male, to an imperfect obliteration of the peritoneal prolongation which invests the round ligament from each internal ring through the inguinal canal to the upper third of each labium majus. This obliteration begins at the two ends—the ring and the labium—and, if it is incomplete, a sac is formed by the unobliterated space. Fluid collecting in this sac forms an oval tumor, which, as it occupies the site of an inguinal hernia, greatly resembles it. In the male there is a congenital variety in which a fine tube of unobliterated serous membrane makes a communication between the hydrocele and the abdominal cavity. In such a case the contents of the tumor can be squeezed up into the abdominal cavity. But this variety I have not yet seen in the female.

The fluctuation, the dullness on percussion, the translucency and the history of the tumor, should generally disclose its character. All doubts may be cleared up by the use of a hypodermic syringe, which will remove air or feces in a hernia, and a clear fluid in a hydrocele. The cure is brought about by emptying the hydrocele either with the hypodermic

syringe or with the finest needle of the aspirator, and by injecting into the sac and leaving them there, a few drops either of the tincture of iodine, or of liquid carbolic acid. Should the hydrocele turn out to be congenital, with a communication leading to the abdominal cavity, the internal ring must be firmly compressed during the operation and the injected fluid carefully sucked out.

HEMORRHAGES OF THE VULVA.

PUDENDAL HEMORRHAGE.

The pudendal regions are so largely supplied with blood-vessels, such as the bulbs of the vestibule, and the vaginal plexus of veins, that a very small wound there may give rise to an alarming or even to a fatal hemorrhage. During pregnancy these venous plexuses become dilated, sometimes, indeed, varicose, and the danger is then enhanced. I have seen the veins of the labia so dilated as to project several inches from the woman's person like a large bunch of earth worms. In Great Britain a considerable number of trials have taken place in consequence of pregnant women bleeding to death after receiving on the labium a kick from a drunken husband. Wounds of these veins may also happen from the puncture of the labium by a fall astride of a stake, or from the breaking of a chamber-pot.

Such a bleeding must be met by the application of lumps of ice, and by injection of a saturated solution of alum into the wound. The solution of alum is perhaps not so astringent as that of the iron subsulphate, but it does not make those plaster-like clots, which become putrid before they can break down, and it is, therefore, altogether a cleaner remedy. Should these fail, the vagina must be packed firmly with oakum, or with cotton-wool, and a compress be laid on the wound, and kept there by a T-bandage. When cotton is used the ordinary kind is better than the absorbent, because it is more elastic and less liable to become matted. Should the hemorrhage continue, the whole thickness of the labium

should be nipped with a pressure-forceps, or with a spring-clothes-pin, which can be found in every house. If worst goes to worst, the bleeding vessels, however deeply situated, can be compressed by silver sutures, passed beneath the womb, and from the cutaneous to the mucous surface.

PUDENDAL HÆMATOCELE.

Sometimes, however, the vessels are torn across, while the skin remains uninjured. The blood is then effused into the connective tissue of the labium, forming what is called a "thrombus," an "hæmatoma," or a "pudental hæmatocele." This form of hemorrhage is far more frequently a lesion of parturition, than the result of direct injury, such as a fall or a blow. These blood tumors vary in size from that of an apple to that of the foetal head.

They are best treated by rest, and by cold applications. If not large, they may undergo absorption and wholly disappear. Should the coagulum liquefy or break down into pus, a free incision must be made on the mucous surface, and the clots turned out. The cavity should afterwards be washed out daily with carbolated or with sublimated water until all danger from septicæmia has passed away, and the healing process has become fully established. Should a secondary hemorrhage occur, it must be treated precisely like a primary hemorrhage—and so must also the hemorrhage resulting from the bursting of the tumor. In all operations upon an hæmatocele, a skilled assistant should be present, for the hemorrhage is sometimes of the most formidable character.

HEMORRHAGE OF THE HYMEN.

One lesion more of this region will briefly claim our attention, and that is a bleeding which sometimes greatly alarms a newly wedded couple. It comes from the broken hymen, and is usually limited to a few drops. But occasionally it amounts to a flooding, and has been known, through the gross ignorance of the parties, to end fatally. Some years ago I was called out of bed early in the morning by a sum-

mons from a hotel. I found a young woman as pale as death, and her husband nearly distracted with fear and anxiety. She was lying in bed in a pool of blood, which had trickled through the mattress on to the floor. Having been married that day, the couple had started on the honeymoon journey, and had lodged for the night at the hotel. Towards morning she awoke, feeling very cold, and found herself in the condition just described. The bleeding came from a torn hymen. I lost no time in stuffing a large sponge into the vulvar opening, and had no difficulty in arresting the bleeding, but several days elapsed before the lady recovered enough from the loss of blood to pursue her journey.

Several analogous cases are reported by Dr. John Morris, of Baltimore. They all took place in hotels, and two of them nearly proved fatal.*

*Transactions of the Medical and Chirurgical Faculty of Maryland, 1877, p. 91.

LESSON VIII.

LACERATION OF THE PERINEUM—ITS CAUSES, ITS PREVENTION, AND ITS CURE.

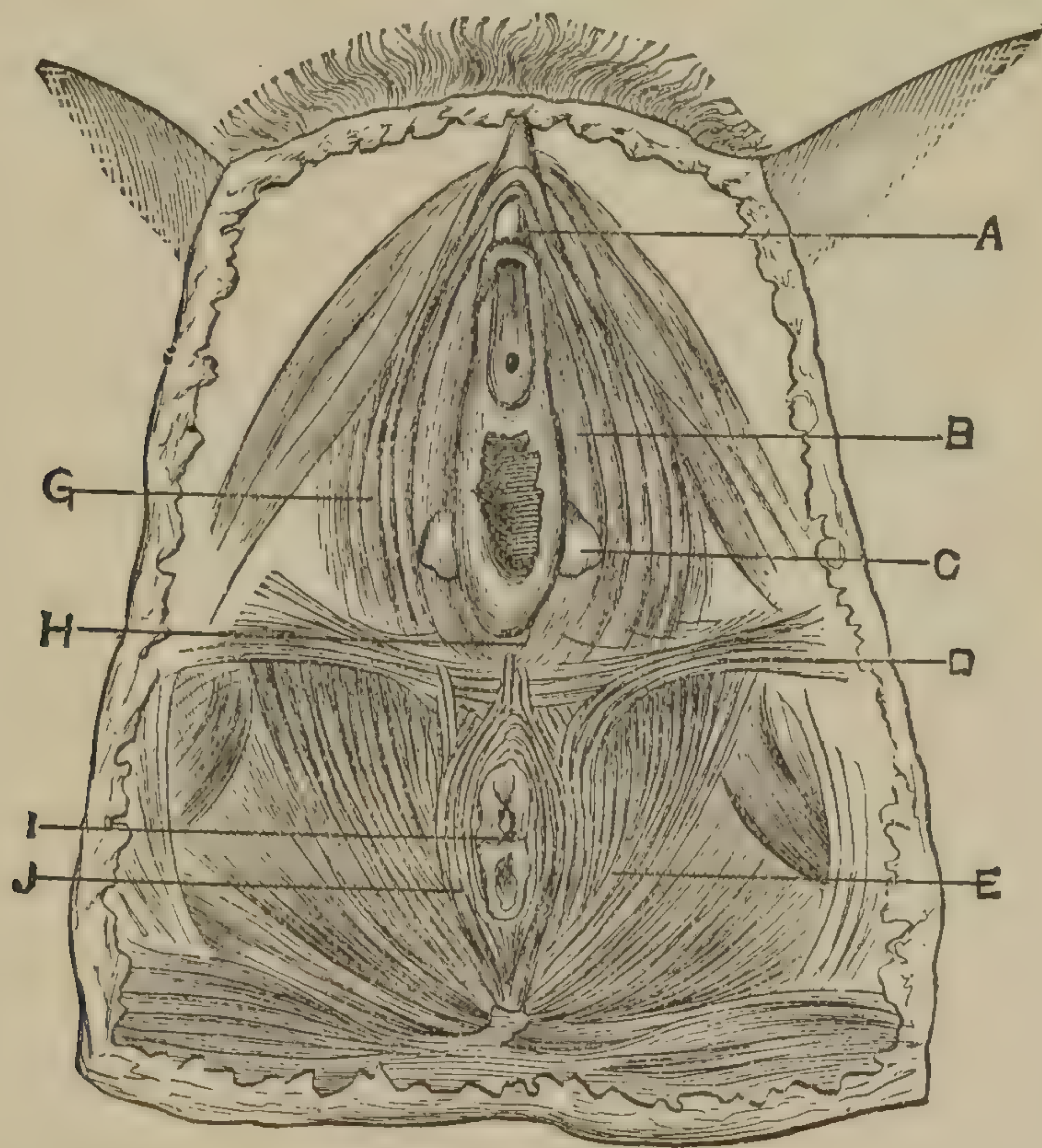
THE PRIMARY OPERATION.

HERE is a fine-looking young woman, twenty-eight years old, who comes to us in sad plight. Ten years ago, in her first labor, she met with the mishap of having her perineum very badly torn. The rent extended through the sphincter ani, and three-quarters of an inch up the bowels. The waters drained off early, and the labor, consequently, became a tedious one. Her physician, a man of large experience, very properly put on the forceps. In delivering the head this rent happened, as it sometimes will happen in spite of the best care. I will not, therefore, blame the physician; nor can I afford to be uncharitable, for I once met with the same disaster. As I separate the labia you see that the perineum has disappeared, and that the vagina and the rectum end in one common opening. It is an ugly-looking rent, but bad as it is, she did not discover it until after getting up. Then her troubles began in earnest, and they have grown more and more exacting, until she has been driven to us for relief.

What the nature of these troubles is, you will best understand by consulting this diagram (Fig. 26), which is copied from Savage's excellent plate. From it you see that the floor of the female pelvis is made up of a mass of muscles so interlaced that hardly one of them has a special property which is not in a measure shared by the others. Upon removing the skin and the superficial fascia, we come midway between the lower vulvar commissure and the anus, to a highly elastic and dense white tendinous structure, called the perineal body (H). It seems to be made by the fusion of several muscles

which meet there. Thus the external sphincter ani (J), which starts from the coccyx, surrounds the anus (I), and is inserted in the perineal body. So, on either side, does the transversus perinei (D). On the other hand, each sphincter vaginæ (G), called also bulbo-cavernosus or compressor bulbi, arises below in the perineal body and sphincter ani, passes up around the vulvar opening like a fleshy ring, and converges to meet its fellow over the dorsum of the clitoris (A). The

FIG. 26.



FEMALE PERINEUM.

property of this muscle is to pull down the rigid clitoris into contact with the male organ, to squeeze out the contents of the vulvo-vaginal glands (C), and to compress the dorsal vein as well as the bulbs of the vagina (B), so as to obstruct mechanically the current of blood and produce a turgescence of these erectile organs. The levator ani (E) is the next important and powerful muscle of this group. It arises from

the ramus of the pubes and the spine of the ischium, and is inserted into the coccyx, and the sides of the vagina and of the rectum. By these attachments, and by interlacements with the corresponding muscle on the opposite side, it and its fellow constitute the true constrictor of the vagina.

Now, without further comment, a mere glance at this diagram shows, that the loss of every fibre at the point of fusion of these muscles entails a corresponding loss of power in the floor of the pelvis, and a consequent impairment of support to the reproductive organs. The sustaining power of the vaginal column depends upon the integrity of its perineal abutment. It is the tonicity of the vaginal walls and the pelvic attachments of the uterus that mainly keep the nicely-poised womb in place. These, in a case of torn perineum, may not at once yield; but they will sooner or later; for air gains access to the womb, irritating and congesting it to such a degree that it will ultimately flex, or it will prolapse from an acquired hypertrophy. The air thus sucked up into the vagina is very liable to escape audibly, constituting that very mortifying disorder which our German brothers call "garrulity of the vagina." The anterior wall of the vagina, being now unsupported, will descend, dragging with it the bladder. The greater the rent, the greater will be the dislocation of the pelvic organs, and the greater the evils entailed. Again, rents of this kind are attended with more or less impairment of the sexual functions. Thus, from the injury sustained by the perineal body, the vulva becomes enlarged, and the vagina relaxed. The bulbs of the vagina are then but slightly compressed, and the sexual act is blunted on the part of the male, and imperfectly responded to by the female. Partly from this lack of reciprocation, and partly from the necessarily shortened vagina, which rejects the semen as soon as ejaculated, the woman, like the patient before us, often remains barren. But should the rent traverse the whole perineum and divide the anal sphincters, or should it extend through the recto-vaginal septum, then, in addition to the above train of evils, there will be an involuntary escape of flatus, and an incontinence of the feces when at all liquid.

For ten years this woman's clothing has been soiled without warning. She is often waked up at night by an involuntary movement of the bowels. She is liable, no matter when or where, to break wind; and she, therefore, stays at home. She told me, with tears, that her person has become repulsive to her husband, and that her friends shun her company. To a young woman, to a young wife, few calamities can be more grievous, and she bitterly denounces her physician.

Another young married lady, whose perineum I restored not long ago, had to keep her bowels costive by daily doses of opium. Yet, however bound they were, she would soil her linen whenever a thunder-storm took place, or whenever she otherwise became nervous. Every two or three weeks she was obliged to take an aperient, and would then have to spend many hours on the commode—"seventeen hours" on one occasion, as she asserted, after taking a dose of castor-oil. In order to spare herself the mortification of breaking wind before others, this lady shunned the society of her friends, and secluded herself in her bedroom. She did not even join the family at their meals; she never went out until after dusk, and never dared to ride in a street-car. Altogether, she was in a sorry plight. It is indeed a sad infirmity; yet, gentlemen, in a busy life very few of you will escape from seeing a laceration of the perineum happen, in some form or other, in your practice. It behooves you, therefore, to know how to treat it, and better still, how to avoid it.

An ounce of prevention being worth a pound of cure, let us inquire into the causes of these lacerations, in order that being forewarned we may be forearmed against them.

These, without minute specification, may be summed up as follows: 1st. Rigidity, dryness and congestion of the soft parts, as in first labors. 2d. Absolute or relative disproportion between the size of the head or of the shoulders, and that of the vulva. This also includes the presence of one forearm, or of both, along with the shoulders. 3d. Every cause, whether moral, anatomical or physiological, that precipitates the passage of the head through the soft parts—as, for in-

stance, violent straining efforts through great nervous excitement, a small head, a straight sacrum, or an overdose of ergot. 4th. Faulty mechanism of labor, such as incomplete flexion or incomplete extension of the head; or an occiput rotating posteriorly. 5th. Keeping the limbs straight and in close contact at the moment of the birth of the head. 6th. Causes dependent on the physician, such as the abuse of the forceps, a faulty method of supporting the perineum, and meddlesome midwifery.

For cases of rigidity, or of disproportion, or of an undersized vulvar opening, anæsthetics will be found of great service. They will also restore moisture to a dry and congested perineum, and curb uncontrollable expulsive pains.

Misdirected traction on the after-coming head, viz., too much in a downward direction as the head is about to emerge, causes the chin to hook over the perineum, and it is in a primipara very liable to be followed by a bad rent. The lesson taught is, therefore, at the close of a breech labor needing help, to turn the woman on her back, to separate the knees, and to carry the child's body well up between them.

My time is too limited to enlarge on all the causes of lacerated perineum; but there are two special and salient ones on which I wish merely to break ground. One cause is the common, and, as I hold, faulty mode of supporting the perineum. The problem seeking solution is this: Given a fetal head, and a vulva through which it must pass, how can the perineum be kept from tearing? Well, this problem looks simple enough, and yet, let me tell you, it is the riddle of the Sphinx. Every physician has literally tried his hand at it, and every one has come to grief. Never yet has it been solved.

One advocates pressure on the perineum with a folded napkin; another with an unfolded napkin; a third scouts all napkins, whether folded or unfolded. One plugs up the rectum; another empties it. The perineum is pushed forward by some, and backward by others. Some place their hand transversely across the perineum; some longitudinally, with

the fingers looking upward; some longitudinally, with the fingers looking downward. As runs our nursery rhyme: "Simon says, 'thumbs up!' Simon says, 'thumbs down!'" and yet the perineum tears, and tear it will, until woman becomes—like the cherubs of the old masters—all wings and no body.

Now, to my thinking, all this diversity of opinion—and, mind you, I have not given you a tithe of the different modes of "supporting the perineum," as it is technically called—means that Nature herself intends to take care of the perineum, precisely as she does the preceding stages of labor, and that she can very generally do it better than the physician. But supposing that the case is a morbid one, and really needs help; or else that you cannot, for the life of you, keep your hands off—what is to be done? Why, imitate Nature. She retards the too rapidly advancing head, and that by making the woman cry out—which at once stops the expulsive pains. You will retard the head by making direct pressure—*direct pressure*, I say—on it.

The word "support," as applied to the perineum, is a misnomer. It is not the perineum that needs support, but the head that needs support. By supporting the head we support the perineum. If the ordinary mode of "support" ever does any good, it is by retarding, through the interposed perineum, the advance of the head. But the good thus gained is more than counterbalanced by the evil. Continuous, firm pressure, with the hand, makes the perineum hot, dry and unyielding. It also hinders it from undergoing equable dilatation; for the compressed portion cannot take its share of the general tension, and the strain is thrown on the fourchette. Bruised, congested and benumbed by such support, the perineum is no longer a living tissue, capable of responding intelligently, so to speak, to the requirements of the occasion—when to solicit, when to repel the advance of the head; again, in the last throes, when such support is, if ever, most needed, the woman is very likely to jerk herself away, and the abruptly released perineum tears.

Make, then, your support, or retarding pressure, directly to the head itself, and not on the perineum; not through a fleshy medium which needs perfect freedom from all restraint, in order to undergo the requisite and inevitable amount of dilatation. For many years I have not touched a perineum for the purpose of saving it. Sometimes I do nothing; at other times I make simply a retarding and guiding pressure with my fingers and thumb spread over the head of the child as it crowns. When the perineum is very rigid, I relax it, by hooking up and pulling forward the sphincter ani, with two fingers passed into the rectum; while with the thumb of the same hand I make the needful restraining pressure upon the head. For this method I claim the following advantages: (*a*) By pulling up the sphincter ani towards the pubes, not only is nature imitated, which always dilates the anal orifice; but the perineum is brought forward without direct pressure, and its dilatation is diffused over its whole surface, causing a corresponding relaxation of the strain on the posterior commissure in the line of its raphé. In addition, its muscular fibres are crowded up to, and consequently strengthen, the line of greatest tension—just as a prudent general hurries up reinforcements to the point of attack. (*b*) The same force which dilates the sphincter ani compels the occiput to hug the pubes and favors extension, especially if the fingers in the rectum are hooked over the prominences of the foetal face, or over the chin. (*c*) This aid is not liable to sudden interruption from the movements of the woman. (*d*) The thumb of the same hand, together, if needful, with the fingers of the free hand, can by direct pressure upon the presenting part restrain its too rapid advance, without exciting that reflex uterine action which is so frequently evoked by the irritation of contact with the perineum. (*e*) The circulation of blood remains free; the nerves are not benumbed by a double pressure, viz., by that of the hand and that of the presenting part; and the perineum, therefore, stays in its natural condition, that of a living, elastic and sentient tissue.

A faulty method, then, of supporting the perineum, plays

an important part in the production of these lacerations. But they very generally stop at the sphincter ani, and are rarely complete. When, however, the rent is a complete one, involving the bowel, you will commonly find that, as in our patient, the third stage of labor has been ended by the forceps. Not a winter passes by without the appearance before you of several such cases. This ought not to be so, but it is so:—and why is it so? For many reasons, at which I have only time to hint. Thus, through false delicacy, many physicians apply the forceps and deliver the woman under a sheet. They work in the dark, and cannot see what they are about. Again, in difficult forceps-cases, the worn-out physician is tempted to brace a foot against the edge of the bedstead. But braced traction means uncontrollable traction; and when the head jerks past the brim, it is very likely, before the physician can recover himself, to tear its way out through the perineum. Or the forceps may slip off, and the physician suddenly finds himself on his back, or brought up all standing by the opposite wall of the room. At best, by the use of the forceps the head is liable to be brought down too quickly upon undilated soft parts, and to be prematurely delivered. Skilled physicians are constantly doing this, and so will you, unless you follow the advice I am about to give. To tell you the truth, such grave lesions to the mother, and for the matter of that, to the child also, from the use of the forceps, are so constantly brought to my attention, that I am disposed to accept Baudelocque's dictum, that, take it for all, "The forceps has been more injurious than useful to society." My advice, therefore, to you—and you will find it a very safe one to go by—is that, in general, and always with primiparæ, you take off your forceps as soon as the perineum begins to bulge, and that you leave the final delivery of the head to the expulsive efforts of your patient.

Yet there are cases in which the very use of the forceps protects the perineum. Thus, for instance, whenever the pubic arch is too narrow, the sacrum is too straight, or the head, in an occipito-anterior position, is overflexed, and the

vertex bears on the perineal centre and threatens to perforate it; whenever, also, in an occipito-posterior position, the head is too little flexed—the forceps is urgently needed. When a tear seems inevitable, it will be of advantage to make lateral incisions in the vulva. If made during a pain the patient will suffer but little. They should, after the complete delivery of the woman, be closed by a stitch in each one.

But supposing that, in spite of the greatest care, a rent has happened. What is now to be done? First, discover the rent. You smile—but not so fast! Through over-delicacy on the part of the medical attendant, lacerations are over and over again escaping his notice, until it is too late to do anything. I have operated on several cases in which the woman has assured me that the discovery was not made until the bowels, after a purge, had proved uncontrollable. So was it with our patient's physician. So will it be with you, unless you make it an inflexible rule, after every delivery, either to look at the perineum or to gauge its thickness between the thumb in the vagina and the index finger in the rectum. Don't forget this.

If a rent be discovered, decently inspect the parts. By daylight this examination can usually be made without the knowledge of the patient. When candle-light is needed, you may either make some excuse or boldly explain your object, and it will be of great comfort to be able to say, that having removed the forceps before the rent happened, it was the child's head and not your instruments that caused the tear. Sometimes a formidable hemorrhage takes place from the perineal wound, and yet you will not discover its source unless you have all your wits about you. You will naturally infer that it comes from the womb, and, will, accordingly, mistreat it by resorting to the usual remedies for post-partum hemorrhage. Make it, therefore, an inflexible rule to separate the labia and visually examine the perineum and the vestibule, whenever blood seems to escape from a firmly-contracted womb. Although labor is the common, yet it is not the invariable, cause of these lacerations. Several cases are on

record which happened from the breaking of a cracked chamber-pot. Women have been gored in this portion of the body by cattle. In sliding down the sides of hay-ricks they have been impaled by the handle of a rake, of a hoe, or of some other implement. But, whatever the cause, the treatment is of course the same.

Since so large a share of a woman's health and happiness depends upon the integrity of her perineum, what should be your rule of action when she meets with this injury? Unless the rent is simply cutaneous, or very slight indeed, and not extending much beyond the fourchette, it should not be left to nature, for nature is here too capricious to be trusted. You must, therefore, make a clean breast of the mishap to the patient, and perform the primary, or immediate operation—that is to say, you must at once sew up the wound. Now, although this advice is sharply criticised by some very good authorities, I offer it to you with the greatest confidence of its soundness. The fears of septicæmia, entertained by some physicians, are purely hypothetical; for, although the suture-tracks form, in one sense, new foci of infection, yet they close up a raw surface, whose area is vastly larger than theirs. Should hemorrhage be present, the sutures will invariably check it. Clinical experience proves that a very large measure of success follows the immediate operation. Again, the contractile power of the sphincter ani after the primary operation is better than after the secondary operation, when its tonicity has become impaired through prolonged idleness. Further, it is far more rational to take advantage of the needful confinement in bed after delivery, and to close the wound at once, while its surface is raw and the maternal soft parts are comparatively numb and insensible, than to postpone the operation to a time when the woman shall be nursing, when the cicatrized flaps shall demand quite a formidable and tedious operation for their denudation, and when a special confinement in bed for two weeks or more will be needed. Had the immediate operation been performed on this woman, she would, most likely, have been spared years of suffering,

and the tedious secondary operation which she has made up her mind to undergo next week.

Immediately after the delivery of the placenta, pass deeply two, three, or more wire sutures, securing each one by merely twisting its ends together. Each suture is entered about an inch from the cutaneous margin of the wound, and each one is buried in the tissues, so as not to be seen. The lowest stitch should always be entered a little below the lower angle, or fork, of the wound, and lie buried in the recto-vaginal septum. But as the sutures are passed in pretty much the same way, in both the primary and the secondary operation, I shall have more to tell you about them when I come to operate on our patient. Let me however add that you may merely twist the ends of the wires together in the primary operation, and not clamp them, because the parts are now relaxed, and there will not be much tension on the stitches. Do this with a good light, and at once, while the wound is fresh, and the perineum lax and comparatively numb and insensible from the pressure and the passage of the head.

Under such conditions ether is not ordinarily needed; you are merely giving a dressing to the wound, a suture-dressing, and that the very best one it can have. Should the lochia obscure the parts, dam them back by a sponge pushed high up. And don't forget to remove the sponge before you begin to twist the ends of the wires together. Then draw your patient's water, put a pad between her knees and bind them together. If the rent be an incomplete one—that is, not extending into the sphincter—you need do nothing more than keep the bowels open every third day and remove the stitches on the eighth day. But, should the rent be a complete one, the sphincter ani being torn through, you will take precisely the same precautions in regard to the bowels and to the bladder, as I shall enjoin upon you when describing the after-treatment of the secondary operation.

While warmly advocating the primary operation, I have not found it on the whole so successful as the secondary. This lack of success is said to be owing to the flurry usually

attending the immediate operation and the lack of skilled assistants; to the irregular surface of the rent which prevents exact coaptation, and to the lochial discharges which insinuate themselves between the surfaces of the wound and hinder union. Two of my three cases of failure were, however, dependent upon other causes. In one, the woman, in a fit of mania, jumped out of bed to throw herself out of the window, and, of course, tore out the stitches. In the other—to which I was called by the attending physician—a violent diarrhœa set in on the third day, resulting in a recto-vaginal fistula, which I afterwards succeeded in closing. If upon removing the stitches you find no union, do not give up in despair, but try to promote healthy granulations by keeping the parts sweet and clean, and by placing in the fork of the wound a pledget of lint dipped in a solution of chloral just strong enough to produce some tingling—say, from five to ten grains to the ounce of water. By these means you may yet hope to save your credit by throwing a bridge of granulations over the anal gap, or by getting more or less of very good union.

Let me here say that rents may also occur, during childbirth, in the vestibule, or the neighborhood of the meatus urinarius. Fatal hemorrhage has been reported from such accidents. I have occasionally met with them, and twice had to resort to styptics. If the bleeding be not thus checked, the rent should be closed by fine sutures.

LESSON IX.

LACERATION OF THE FEMALE PERINEUM.

THE SECONDARY OPERATION.

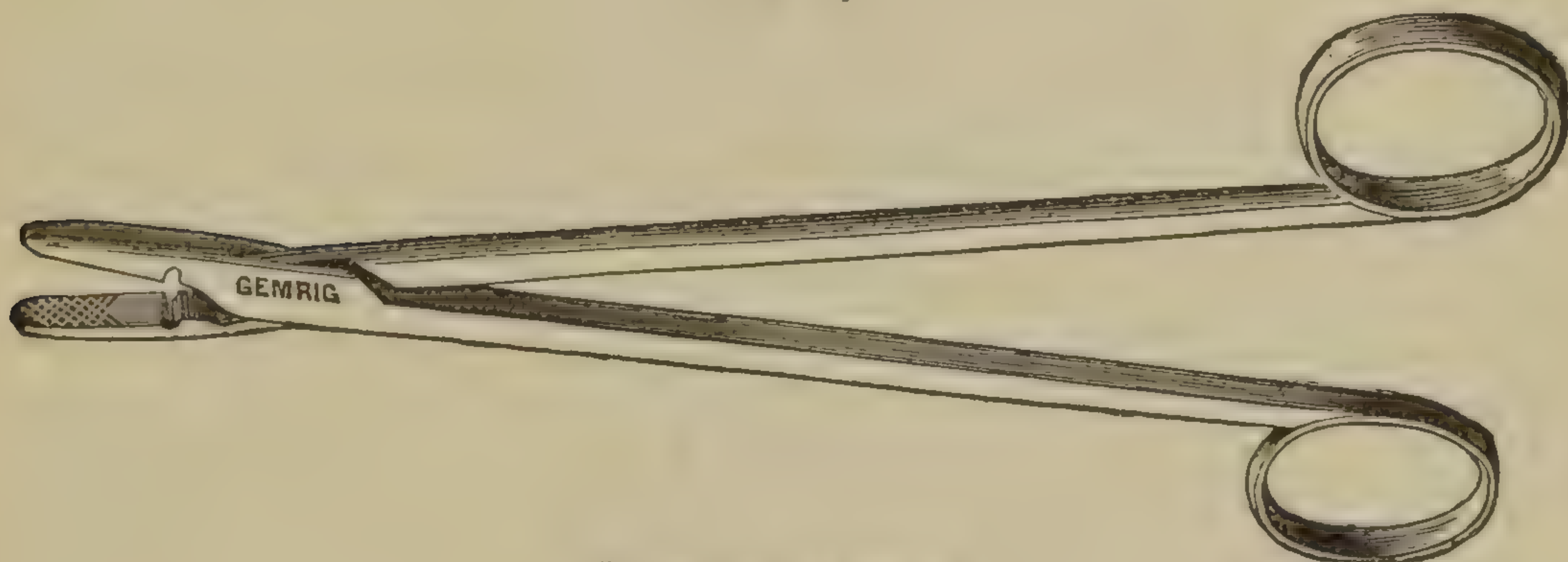
YOU will remember, gentlemen, that when we last met, I spoke of the causes and the prevention of laceration of the perineum, and left off after describing the primary operation for its cure. Now, suppose you utterly fail to get union by the immediate introduction of sutures, what is next to be done? Wait until the wound has cicatrized, and the woman has wholly recovered from her lying-in. Then reconstruct her perineum by the operation which I am now about to perform upon the patient whom you saw at my last lecture.

Here she lies before us, because she missed the golden opportunity for immediate repair. The broken ends of the anal muscle have retracted, which explains the wrinkles and puckers of the lower verge of the anus. The parts are rigid, and otherwise deformed by cicatricial contraction. The chance for the simple suture-dressing has gone by, and she now will be compelled to undergo a tedious and bloody secondary operation.

She is in as fair health as a woman thus afflicted can be. Had she a diarrhœa or a cold, I should postpone the operation; for one untimely movement of the bowels, or the succussions from incessant coughing or from sneezing, would interfere with union. Were she nursing, I should, both for her sake and for that of the child, advise delay until the child had been weaned. Nor should the operation be performed just before a monthly period, but a few days after. Early yesterday morning she took a full dose of oil, and this morning one grain of opium in order to restrain the bowels from further action. To avoid ether-vomiting, she has eaten a very light breakfast.

The instruments needed for this operation are as follows: an ordinary scalpel and a pair of scissors curved on the flat; a long-handled rat-toothed forceps; half a dozen *serres-fines* (Fig. 30); a few perforated "number-one" shot, and a shot-compressor (Fig. 27); a self-retaining catheter; one blunt-edged perineum needle, with an eye near its point; silver wire, several surgeon's needles with varying curves and a needle-holder (Fig. 28). All these instruments are, however,

FIG. 27.



SHOT-COMPRESSOR.

FIG. 28.



NEEDLE-HOLDER.

not absolutely essential. At a pinch, a pair of jeweler's flat-nosed pliers will answer all the purposes of a shot-compressor or of a needle-holder. An ordinary flexible catheter, if not pushed in so far as to hit the fundus of the bladder, makes a very good substitute for a self-retaining one, such as the Skene-Goodman, which is the best. It can be kept in place by being tied to the pubic hair.

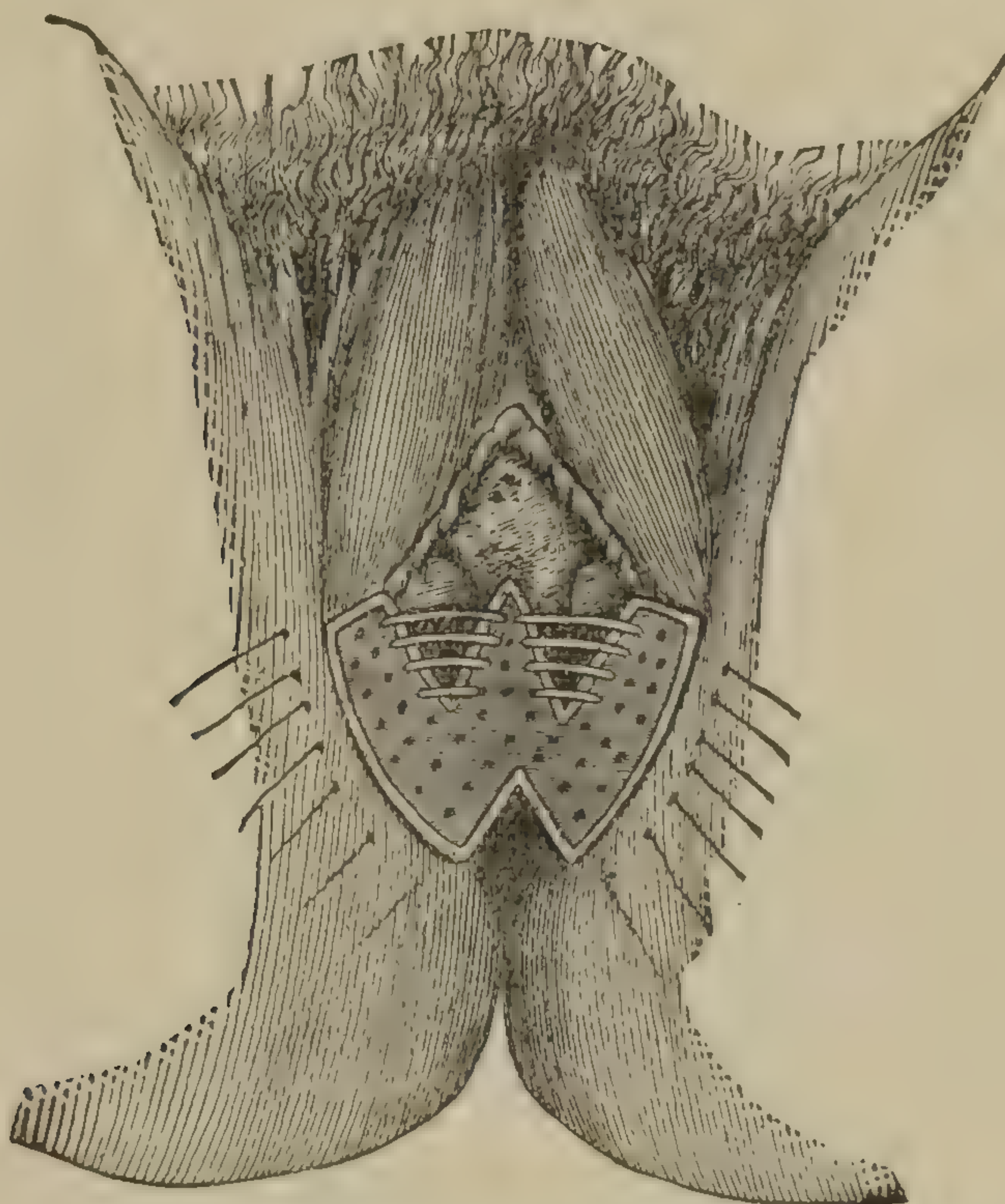
Deeply etherized, our patient will now be brought in the lithotomy position to the end of this table, which fronts a good light. Her knees are supported by these two gentlemen, who also place the fingers of the free hand on either side of

the vulva, and stretch it open. In addition I find, that this yoke, or shackle, which I brought from England, is of great service in supporting the knees and in keeping them firmly apart. A third assistant attends to the etherization, while a fourth looks after the sponges and instruments. Of course, one can operate with but three, or even with two assistants, as has been my experience in the country; but it is far more satisfactory to have the aid of four. The first thing now to be done is to clip off the hairs around the rent, the next to pare its cicatrized edges. But if I should first denude the lateral surfaces, the blood would trickle down over the rectal portion and obscure it. I therefore introduce two fingers in the bowel, so as to put the over-lying and rugous mucous membrane on the stretch, and begin the operation by trimming off the rectal edges of the rent, and by snipping off with the curved scissors a narrow ribbon of its mucous surface. Two small dimples on each side of the anus, which are the retracted ends of the ruptured sphincter, are hooked up by a tenaculum and included in this rectal denudation. Next I catch hold of the left side of the rent with tissue-forceps and denude it in successive strips by the curved scissors. By encroaching inwardly on the mucous surface of the vagina, and outwardly on the cutaneous surface of vulva, there is gained on the left labium a raw surface a little longer and a little broader than the glazed cicatrix of the original perineum. Having finished the left side I turn my attention to the right side of the rent, which is to be denuded in like manner, so as to be the exact counterpart of the former. Now I seize the rectal edge of the vaginal mucous membrane, which has hitherto been untouched, and dissect it up in a triangular flap. This is done partly by snipping with a pair of scissors, and partly by stripping it up. Most operators cut this off, but I shall save it and utilize it in making the inner or back wall of the perineum and in adding to its thickness. You will understand this better by looking at the diagram I now show you.

The oozing of venous blood, you see, is quite free; and this

is usually the case in all operations of this kind, because the parts are vascular, and cicatricial. Close to the lower edge

FIG. 29.



THE AUTHOR'S OPERATION FOR COMPLETE TEAR OF THE PERINEUM.

This diagram represents the secondary operation, when the rent involves the recto-vaginal septum.

of the raw surface two small arteries are springing, but I shall not tie them, lest the ligatures should act as foreign bodies, and prevent union. By nipping each one with a *serre-*

FIG. 30.



SERRES-FINES.

fine (Fig. 30), I stay the bleeding. In all operations in which you wish to avoid the use of ligatures, you will find these lit-

the spring-clips of great service. I shall leave them on until the wound is ready to be closed.

See what a symmetrical raw surface we have; it looks very like a red butterfly with its tail cut off. But, before folding its wings, and closing the wound, I hunt for some little islets of mucous membrane which may have escaped the scissors. It is not always easy to distinguish them from the raw surface; so, to be on the safe side, I snip off every suspicious-looking ridge. The sutures must now be passed, and since success, in either the primary or the secondary operation, depends mainly on the manner in which this is done, I bespeak your closest attention. A sharply-curved needle held in the jaws of a needle-holder (Fig. 28), and armed with silver wire, is entered in the left buttock, on a level with the *lower* margin of the anus, and about half an inch away from it. By my finger in the rectum, I pilot this needle through the recto-vaginal septum, so that by one sweep it completely girds the rectal rent, and emerges at a corresponding point of the skin on the right buttock. The free ends of this suture are alone visible; its loop lies wholly embedded in the septum. This suture was devised by Dr. Emmet, and a very important one it is whenever the sphincter ani is torn through, or a limited portion of the recto-vaginal septum is involved. It purses up the margins of the slit in the bowel, and brings together the ends of the broken muscle, smoothing out the wrinkles and puckers of the lower verge of the anus. If it does not do this satisfactorily, another suture, with a finer wire and needle, is passed below it, but more superficially, in order to ensure the coaptation of the ends of the sphincter.

When, however, the slit in the septum is over an inch in length, its closure cannot be safely entrusted to this single stitch. Not long ago, I received a letter from a physician in the West, who sought my advice. In a very difficult forceps case, he had had the misfortune to see his patient's perineum give way, and her recto-vaginal septum torn up for two and a half inches—very nearly up to the cervix uteri. I wrote back to him to sew up, first, this slit in the septum, with a

sufficient number of interrupted gut-sutures, knotting each one in the rectum, and then to close the perineum by the operation that I am now showing you. These gut-sutures, by the way, need no further attention, for they disappear by absorption.

The perineum proper I shall now close by several other metallic sutures, which will be carried by my long-curved perineum needle (Fig. 32). The wire which I use, No. 27,

Fig. 32.



GOODELL'S PERINEUM NEEDLE.

is not so thick as that sold for this operation; but it is a much finer one, as fine, indeed, as is compatible with safety. Paradoxical as it may seem, the thicker the wire, the more likely it is to bury itself in the tissues, for the wire, strictly speaking, does not cut the flesh, but ulcerates its way into it. Remember this.

The first three of these sutures are so passed as to lie completely buried in the tissues, and to appear nowhere in the wound. The remaining four stitches take up the triangular flap, and are buried in it, excepting at the points where they enter the flap and emerge from it. Be very careful that these sutures are buried in the flap and do not emerge on its mucous, or vaginal surface, else the circulation will be cut off from it, and it will slough. In not one of my cases has this flap ever sloughed or ever failed to unite. I make it and utilize it in every secondary operation on a torn perineum,

whether the sphincter is involved or not. It adds greatly to the thickness and to the strength of the new perineum, whose vaginal cicatrix does not now lie in the median line, as it does in the numerous operations for this lesion.

Whenever a rectocele is present, I denude the posterior vaginal wall up to the crest of the rectocele. Then, and only then, do I begin to dissect up the mucous tongue, or vaginal flap. In this way the rectocele is wholly taken in, and forms the back and sloping wall of the new perineum.

Although my long perineum needle is the handiest instrument for the introduction of these deep sutures, because it is passed at one sweep, it is by no means indispensable. An ordinary surgeon's needle two inches and three-quarters long, and slightly curved, will answer the purpose well if held in the bite of a needle-holder.

I now remove the *serres-fines*, and, as you see, the arteries do not bleed, but the general oozing is free. This is the usual case, but fortunately the pressure made by the adjustment of the sutures will always stop it. You may, if you choose, secure the wires by merely twisting them; but from habit I prefer to clamp each one by a perforated shot, and to cut off the wires very close to it. As perfect co-aptation has been gained by these deep sutures, no superficial ones will be needed.

The operation is now ended; but, before removing our patient to her bed, let me empty her bladder. While withdrawing the catheter, I keep my finger closely applied to its mouth, so that a few drops of urine retained within it shall not escape and trickle over the wound. I also fold up a soft napkin, put it between her knees, and bind them loosely together.

Upon the after-treatment also will the success of this operation greatly depend. In order that no drops of urine may come in contact with the wound, and by irritation prevent union, I shall have her water drawn off until the stitches are removed. Twice a day is usually often enough; but on several occasions I have met with an irritable bladder which

urgently called for far more frequent evacuations. Should such a complication present itself, or should the nurse be unable to pass the instrument, or should your patient live at a distance, the Skene-Goodman self-retaining catheter (Fig. 11) may be worn.

In order not to injure the bladder, it is made bulbous and short, so as just to pass the neck and not to touch the fundus. By a piece of rubber tubing drawn over its mouth, the urine can be conducted into a vessel on the floor, and the bed kept dry and sweet. For the introduction of the ordinary catheter, the best posture of the woman is the one on the back with the legs and thighs well raised up over the abdomen. The meatus can then be reached without unbinding and separating the knees. The self-retaining catheter with its rubber tube should be carefully cleansed by injecting through it into the bladder twice a day as much warm water as the woman can bear. Otherwise, urinary deposits will clog it up, and may even produce cystitis. For instance, I was once called into the country to operate on a perineal rent, which extended nearly one inch up the recto-vaginal septum, and was, as usual, caused by the use of the forceps. After the operation a self-retaining catheter was introduced, which, through some misunderstanding on the part of the attending physician, was not removed. At my next visit, a week later, I found to my dismay the lady in great pain, the catheter and tubing wholly clogged up, and the contents of an over-distended bladder dribbling away over the perineum. On cutting the sutures, to my surprise and great delight I found that, in spite of these drawbacks, perfect union had taken place. But for two months thereafter the lady was annoyed by so distressing an attack of cystitis, that she described herself as having fallen from the frying-pan into the fire. She ultimately got perfectly well; but it taught me a lesson which I wish to impart to you.

Opium will be given to ease the painful tension of the sutures; one grain every four or every six hours will probably be ample enough. No local dressing, besides cleanli-

ness, and daily dustings with iodoform, will be needed. Formerly I used to wash out the vagina twice daily with a carbolated or a sublimated solution. But I found that the manipulation and the motion of the patient, required in introducing the nozzle of the syringe and in slipping a bed-pan under her, did more harm than good. So now I do not wash out the vagina until after the stitches are out. There is one annoying complication of which you need to be forewarned—and that is a very painful collection of wind in the bowels, which few escape. How and why this happens, I cannot say; but the only sure remedy is the introduction into the rectum of a flexible male catheter. And that reminds me of another point: Charge your patient not to stand on ceremony when she feels the inclination to break wind. Efforts to withhold it may cause a damaging contraction of the sphincter muscle.

Occasionally, when your patient is fat, or is lying on her back, the wind escapes involuntarily, and she will think that she breaks it from the vagina, and will insist upon it that the operation is a failure. This happened not long ago to one of my private patients. It gave her and me much needless anxiety, for when the sutures were cut I found that perfect union had taken place. Here are the shotted sutures which were used in her case. The one beaded by two shot lay next but one to the anus; it is the longest of all, and measures just 3.75 inches. I exhibit it especially to show you how long it is, and how much flesh it must have enclosed in its loop.

Our patient's diet will be restricted to food that produces the least amount of feculent refuse. It will, therefore, exclude milk, and consist of toast, eggs, rice, broths, soups and beef-tea. At the end of three full days an aperient will be given; my favorites are a dessert-spoonful of castor oil or two drachms of Epsom salts, administered every four hours until the bowels are moved. On the eighth day, the aperient is repeated, and, after it has acted thoroughly, and the bowels have quieted down, all the stitches are removed. After this

a teaspoonful of the compound licorice powder will be given every other evening. Now, also, is the time to wash out the vagina twice daily, either with a 3% solution of carbolic acid, or with a 1:4000 solution of corrosive sublimate. The latter is the better of the two, but it must not be made stronger when given twice a day, as constitutional symptoms may ensue.

For two weeks, at least, she will keep her bed and have her knees bound together. After that she may be allowed to sit up, but not, for a week more, to walk about. Such precautions are needful, in order that the newly-united tissues may not become absorbed, or become relaxed by overstretching.

Should, unfortunately, a fistulous opening in the recto-vaginal septum remain, it may, if small, be treated by an application of the *acetum cantharidis* or of fuming nitric acid, followed by co-aptation with *serres-fines* or with sutures, and, these failing, by burning it with the actual cautery. If the fistula be of any size, no treatment will probably be successful other than that of cutting through the united portion and of doing the original operation over again.

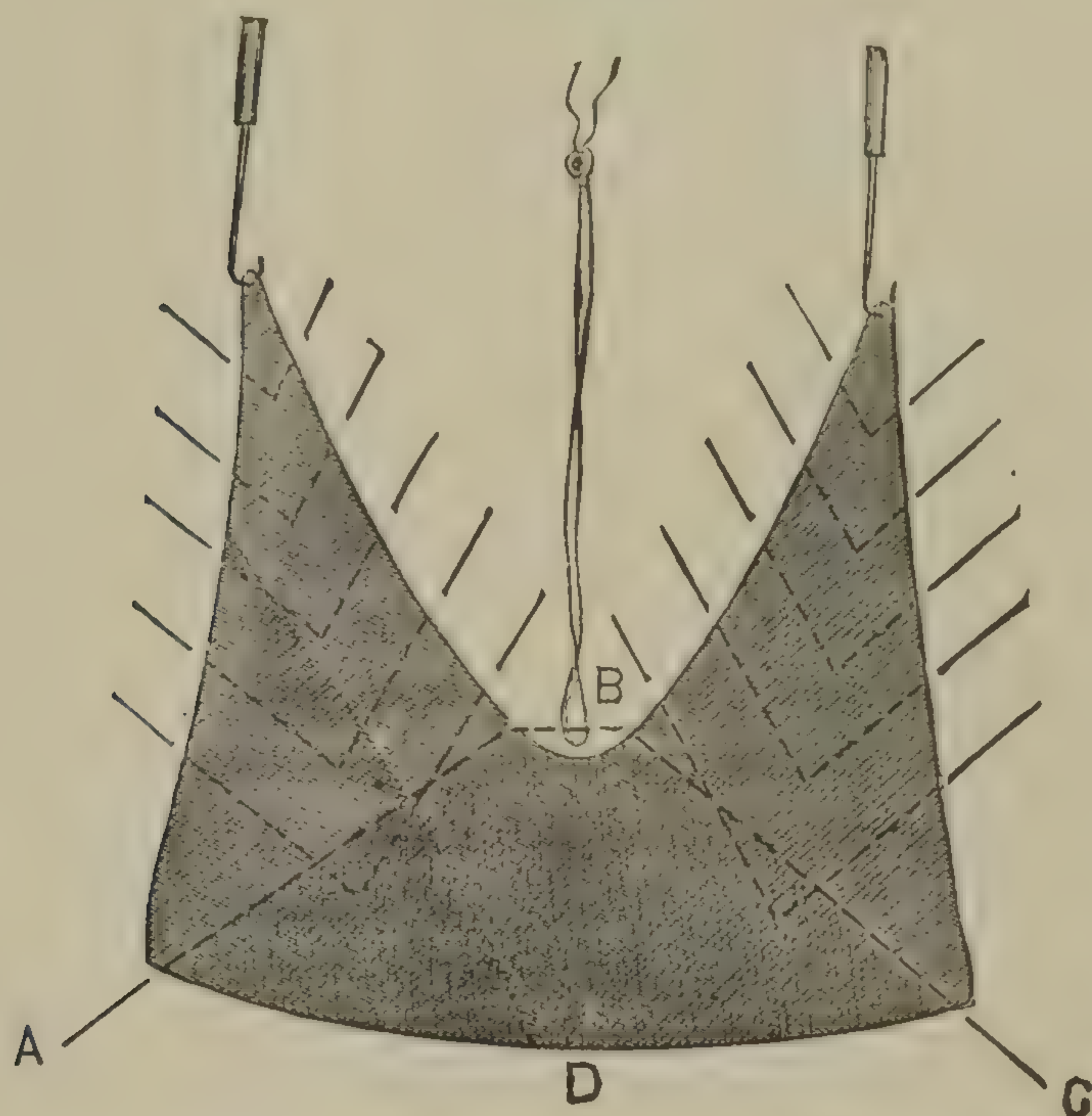
Although the operation for laceration of the perineum may be a successful one in respect to the union of the raw surfaces, yet usually the control over the bowel does not at once return; sometimes, though rarely, it is not wholly regained, for the sphincter ani, like other muscular tissue when long idle, may have wholly lost its contractile power. You must, therefore, be careful how you commit yourself to the promise of a rapid or a perfect cure.

Other operations have been devised for this lesion, but the one just performed before you is simple and yet very successful. Its good results many of you have repeatedly witnessed; and after a very large experience with it, I feel myself entitled to recommend it very warmly in every case of complete or of incomplete laceration of the perineum.

Emmet's Operation.—For incomplete rents of the perineum, especially when accompanied with rectocele, there is an opera-

tion, devised by Dr. Emmet, about which I ought to say a few words, because, while I do not like it so well as I do my own, it comes from a very distinguished gynecologist, and it offers the great advantage of being followed by very little suffering. From this diagram you will best understand the operation (Fig. 33). A long and a strong suture is passed through the

FIG. 33.

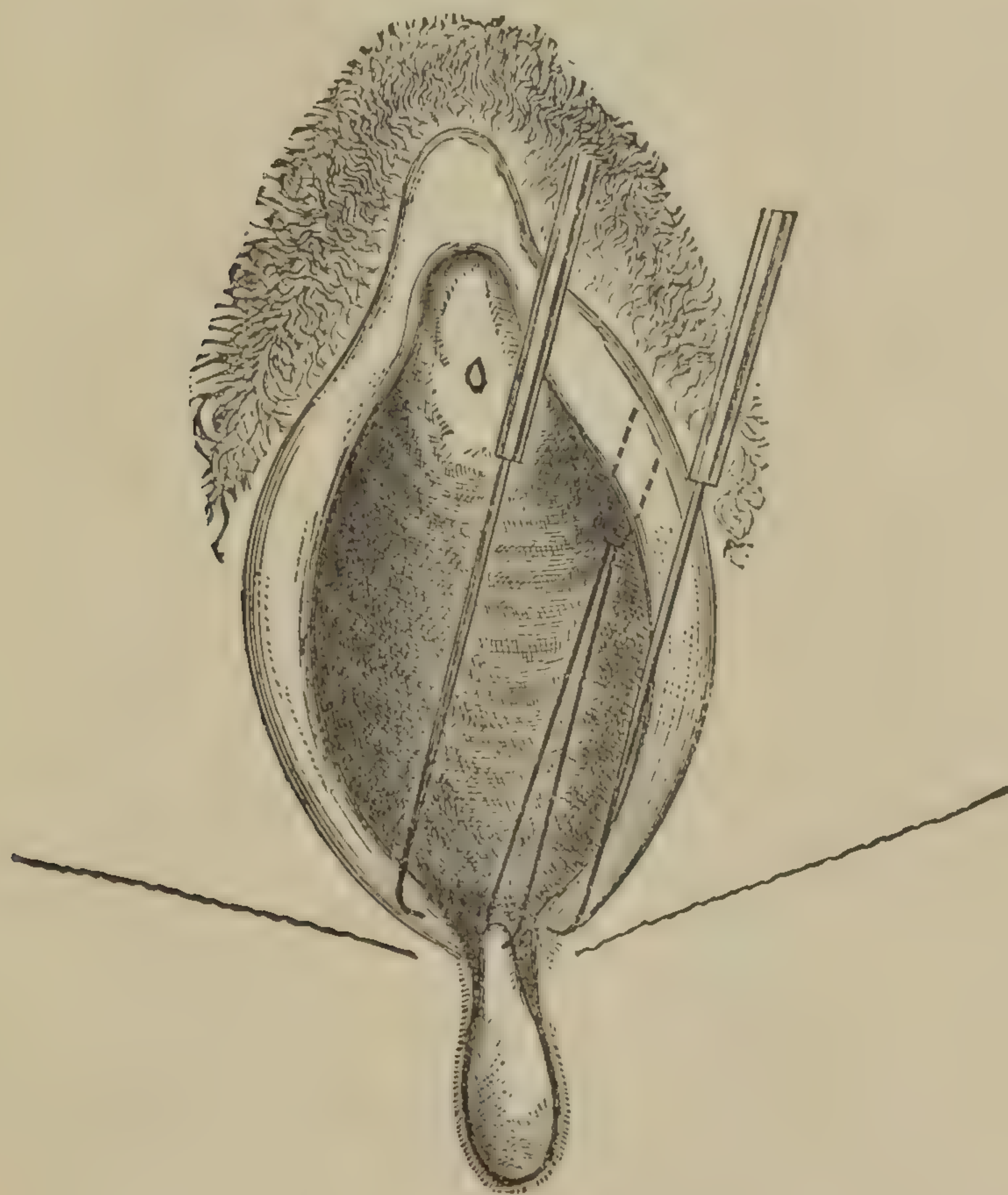


SCHEME OF EMMET'S OPERATION.

crest or summit of the rectocele (B), and the two ends tied together. The mucous membrane of each labium at the highest point of the cicatrix is then hooked by a tenaculum. The suture and the two tenacula being now handed to the two assistants who are supporting the knees of the patient, and the parts being made tense by upward and outward traction, the operator denudes the included mucous surface by long and unbroken strips until the suture—viz., the crest of the rectocele—is reached. He now extends the denudation up the sulcus on either side, being guided in this by the length of each sulcus, and not by any regard to getting uni-

formity of the denuded surfaces on each side. A tenaculum is now hooked into the apex of one sulcus, and upward and backward traction is made. While the sulcus is thus lengthened out, and its denuded edges brought nearer and more parallel to one another, it is closed by sutures passed by a straight needle. Each one is entered one-third of an inch from the margin of the sulcus, and passed from behind for-

FIG. 34.



GAPING RAW SURFACE BELOW CROWN SUTURE.

wards towards the operator, to emerge at the bottom and median line of the sulcus. It is then reintroduced at the point of exit, repassed upward and backward away from the operator, and made to emerge on the opposite side of the sulcus, at a point corresponding to that of entrance. The object of this is to draw as much upward as possible the tissues, which

from the rent, have slid downwards towards the anus. Each suture, as soon as it is passed, is secured either by being shotted or by being twisted. The other sulcus is treated in like manner. Finally the crown suture (A, B, C), is passed from the upper end of the wound in the perineum proper. Its course to and from the crest of the rectocele is a deep one, being buried throughout. When this crown suture is tightened, and the parts are brought together by the aid of two tena-

FIG. 35.



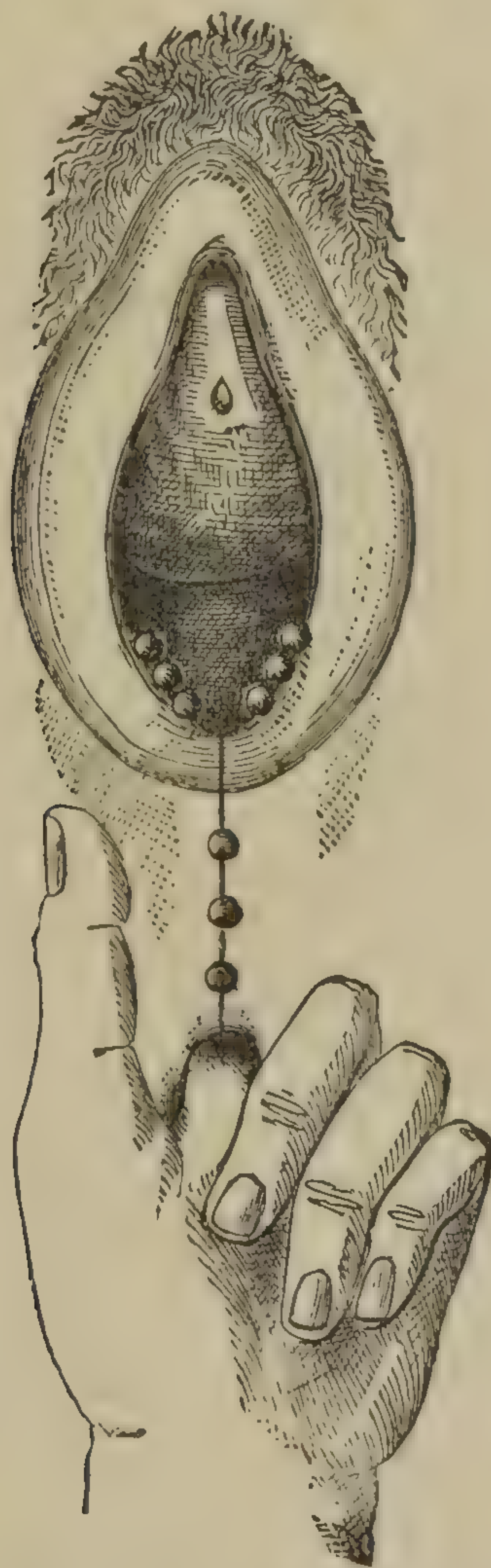
CROWN AND SUPERFICIAL SUTURES SHOTTED: DISAPPEARANCE OF VAGINAL SUTURES.

cula, the stitches of each sulcus disappear from view, and a small gaping raw surface is left below it, which may need two or more superficial sutures (Fig. 34). After the shotting or the twisting of the crown suture and of the superficial sutures, which completes the operation, they alone will be in sight, the vaginal sutures—viz., those of each sulcus—being wholly concealed (Fig. 35). They, indeed, cannot readily be brought into view, unless a finger be introduced into the rec-

tum, and the lower commissure of the vulva be everted (Fig. 36).

The after-treatment is the same as in my operation. At the end of a week the crown-stitch, together with the superficial stitches, are removed, and four or five days later the

FIG. 36.



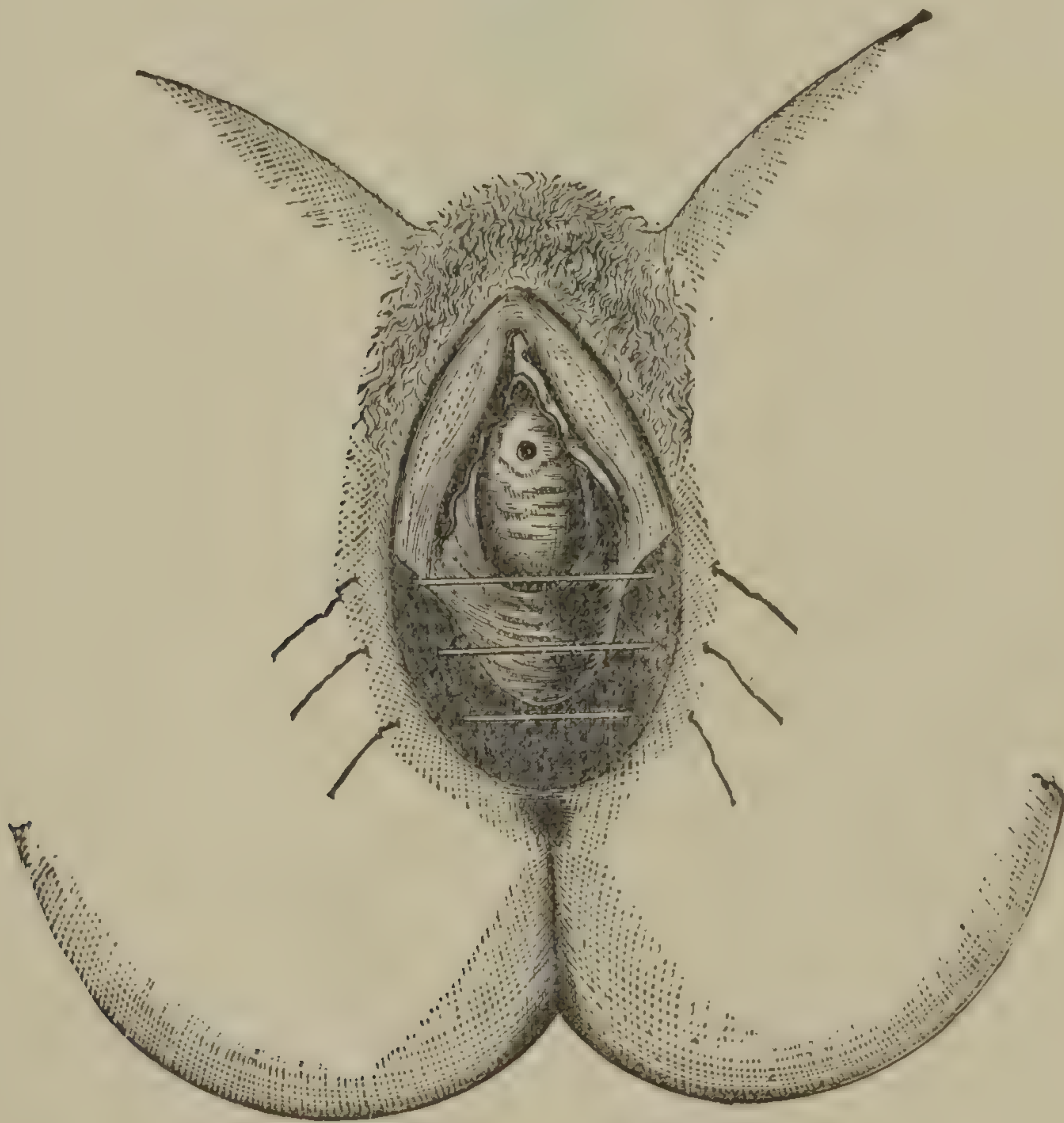
VAGINAL SUTURES EXPOSED BY FINGER IN RECTUM.

vaginal sutures. These are best brought into view and reached by partly everting the vagina with a finger in the rectum. It will be seen that, as most of the stitches are vaginal, and there is only one deep perineal suture, the after-suffering must be very much less than in those operations in

which all the sutures lie deep, and include much cutaneous surface, which is always most sensitive.

The most common operation for lacerations of the perineum is the one, a diagram of which I now show you (Fig. 37), to warn you against performing it. It consists of the denuda-

FIG. 37.



A SKIN-THICK PERINEUM.

tion of merely a narrow ribbon of tissue, horse-shoe in form. Now while this makes a perineum very presentable to the eye, it is too thin—merely skin-thick—and is of no use whatever as a support to the pelvic organs.

LESSON X.

METRITIS AND ENDOMETRITIS; ACUTE AND CHRONIC.

ENDOMETRITIS.

BY *endometritis* is meant an inflammation of the lining membrane of the womb—a uterine catarrh. In its chronic form it is found in by far the great majority of our clinical patients, and is, undoubtedly, the most common of the uterine disorders. As such it demands our careful consideration.

Acute Endometritis as an idiopathic disease is, in my experience, very rare, unless as the result of gonorrhœal infection. It sometimes occurs in the course of acute fevers, especially of the exanthemata. Occasionally it is kindled up by excessive or by perverted sexual intercourse, or it follows a suppression of the menses from a sudden exposure to cold. As the result of traumatism, the acute form of this disease is unfortunately far more frequently met with. It may come from the use of sponge-tents, from the introduction of the sound, or from the most trivial operation on the cervix. Since under these circumstances it is very liable to develop rapidly into an acute metritis, being indeed the initial stage of this serious disease, it is greatly dreaded by the gynecologist. Since acute metritis, apart from child-birth, barely exists excepting as an advanced stage of acute endometritis, I shall make no further allusion to it than the present one.

Acute idiopathic endometritis manifests itself by a more or less well-marked febrile movement, by supra-pubic tenderness, by uterine and pelvic pains shooting down the thighs and darting into the back, and by rectal and vesical tenesmus. Bimanual examination will reveal a sore and an enlarged womb. At first the cervix and the vagina are hot and dry,

but in a few days a thick, yellow, purulent discharge issues from a gaping and swollen os uteri. At its appearance the constitutional symptoms abate, but now the parts which it bathes are usually secondarily affected by its acrid character, and we get vaginitis and pruritus vulvæ.

The treatment of the idiopathic form should, during the dry stage, be strictly antiphlogistic. This consists of rest in bed, neutral mixture with morphia, minim doses of aconite, turpentine stupes, hot fomentations, vaginal suppositories of morphia and of extract of belladonna (one grain of the former to two grains of the latter), vaginal douches of hot water containing a little laudanum and ice to the head and even to the abdomen.

At first the bowels must be kept bound, but after the brunt of the acute stage has passed off, a saline cathartic should be given. Blisters may now be applied to the abdomen, and mild astringent injections made into the vagina. By such a treatment it usually will slowly mend, but it is very liable to merge into the chronic form, the treatment of which will be described under its appropriate heading.

The traumatic form of acute endometritis is a far more dangerous disease, and needs far more vigorous handling. Unlike the idiopathic form, it is not always a frank inflammation, but a septic one, with the tendency of assailing all adjacent structures, and developing into a metritis and a peritonitis. Almost always the inflammation creeps up the oviducts and attacks the ovaries and peritoneum. Fortunately, however, it generally is limited to the pelvis, and is pretty manageable. But the symptoms of peri-uterine inflammation, then, overshadow those of the endometritis. In exceptional cases the inflammation violently attacks the walls of the womb, and develops into acute metritis. Sometimes it kindles up a general peritonitis, which is usually fatal.

Acute traumatic endometritis in the majority of cases is ushered in by pelvic pains and by soreness in the pelvic region. Beyond this, when properly treated, it does not often

go. When, however, it is septic in character, its course is a very rapid one, and the walls of the womb, the ovaries and the peritoneum are soon implicated. It then begins with rigors, or with severe uterine pains, followed by high fever, great abdominal tenderness, and a distended belly. If not soon controlled, vomiting sets in, dark circles appear under the eyes, the breath gives off the peculiar hay-like odor, and the patient dies in a few hours.

Bearing in mind the septic tendency of this inflammation, I have always treated every case of traumatic endometritis with the same promptness and in the same manner as I treat puerperal septicæmia. For all pelvic inflammations induced by a uterine treatment, or, indeed, for those following labor, I am in the habit of giving from twenty to sixty grains of quinia during the twenty-four hours; morphia in quarter-grain doses repeated frequently enough to keep the pain under; and, while the pulse runs high, from ninety to one hundred and twenty grains of the potassium bromide. From the umbilicus downward the abdomen is to be painted twice a day with the compound tincture of iodine, and then to be covered by a large poultice of corn-meal, over which is spread a piece of oiled-silk or a well-greased sheet of brown wrapping-paper. If the body-heat runs high, an ice-cap to the head and an ice-bag to the belly, together with cold drinks, will often lower the temperature very efficiently as well as gratefully. The diet is to consist of beef-tea and milk *ad libitum*, egg-nogg, and more or less of whisky or of brandy. When the pelvic pains are very acute, the morphia should be given hypodermically until they are controlled. Whenever possible the uterine cavity is to be washed out twice daily by injections of a two per cent. solution of carbolic acid. In cases in which this cannot be done, large quantities of the same solution, made as hot as can be borne, are thrown up the vagina. If the inflammation be limited to the endometrium and to the peri-uterine tissues, the prognosis is favorable. But should metritis supervene, the danger is greatly enhanced.

CHRONIC ENDOMETRITIS.

A chronic catarrh of the womb may be the result of an acute attack; but like other chronic diseases, it usually begins with all the symptoms of chronicity; arrested involution after labor being its great source. It is the custom to subdivide this heading into two others, based upon the supposed limitation of the disease. Thus in some of your text-books, you will find cervical endometritis, and corporeal endometritis. This subdivision seems to me too arbitrary; for while I am willing to admit that the catarrh is often greater in the neck of the womb than in its body, I do not believe that in any given case the inflammation is ever wholly limited to any one portion of the womb to the exclusion of the other. And, for the matter of that, I do not think that there ever existed a chronic inflammation of the mucous membrane of the womb, which did not, to some extent, involve the parenchyma.

The symptoms of this disease are those generally understood to be uterine symptoms, and these, in most of the uterine diseases, vary so little, except in degree, that a positive diagnosis cannot be elicited from them. These symptoms are pain in the loins and in the small of the back, spinal irritation, a bearing down of the pelvic organs, weariness on the slightest muscular exertion, and menstrual disturbances, the flux being painful, irregular, or too free. Leucorrhœa is always present, the discharge being viscid and ropy when it is secreted mainly from the Nabothian follicles—that is, from the cervical glands—and thin, muco-purulent, and sometimes rusty, when it comes from the body of the womb. A popular idea obtains that leucorrhœa means the loss of a highly vitalized fluid, and that it is consequently very weakening; but it is merely a mucous secretion, and is no more weakening than the discharge of a nasal catarrh. Like that of coryza, this discharge is often so acrid as to scald the cervix into an erosion, and to cause excessive pruritus. These are soon followed by such reflex symptoms as ovarian pains, and vesical and rectal tenesmus. Then, the nervous system becoming

upset, the spirits are low, and the temper is capricious. Yet, I believe that the importance of endometritis as a factor in woman's ill health is greatly overrated, and that, unless nerve-prostration enter into the case as a complication, the symptoms are not so very exacting, and, indeed, may be wholly absent.

CHRONIC METRITIS.

By chronic metritis is meant such tissue changes in the substance, or parenchyma, of the womb as are brought about from a previous inflammation, or from persistent hyperæmia. Since chronic metritis comes far more frequently from hyperæmia, than as a product of inflammation, and since the tissue changes are greatest in the connective tissue, Dr. Thomas has adopted the term areolar hyperplasia to designate it. But, since the pathology seems not yet to be fully established, and the term chronic metritis by usage conveys the meaning, I have preferred to retain it. In its early stages it appears to be characterized by passive congestion and by infiltration of a sero-sanguinolent fluid. Partly from the mere bulk of this effusion, and partly from its organization, but more from the former, the walls of the womb at first thicken, soften, and become so flaccid as to predispose to flexions. Later on, there comes, through nutritive, or formative, congestion, a diffuse growth, or hypertrophy of the whole womb from proliferation of the connective tissue cells. Greater weight and size are the tokens of this stage, and the uterine cavity may measure from three to four inches. At last, through growth-pressure, the blood vessels are so constricted as to diminish the supply of blood, and make the womb anæmic. This brings on the final stage, that of sclerosis, in which denseness and hardness and anæmia of the whole womb replace the previous vascular flaccidity, and "set" existing flexions. Its walls grow thinner and its bulk lessens; but it never returns to its natural small size, and stays through life bulky, and as hard as a fibroid tumor. The first and second stages are more or less amenable to treatment. But the last one is incurable, and can be made only more bearable.

Like chronic endometritis, chronic metritis is alleged to attack the cervix or the body of the womb separately, and it is accordingly subdivided into cervical and corporeal metritis. But, while granting that the cervix, from the greater injuries it sustains in coition and in parturition, is often more profoundly affected than the corpus, I cannot accept in all its fullness the theory of limitation, for I have yet to see a case of metritis in which the tissue changes did not exist in the whole womb.

In my experience, chronic metritis never exists alone, but is always associated with endometritis. It is one of the most common of uterine disorders, and in the vast majority of cases starts directly from an arrest of involution after labor, and especially after a miscarriage. There is no doubt that endometritis is sometimes its cause, sometimes its effect. For owing to the absence of any sub-mucous connective tissue, the inflammation of the endometrium must sooner or later involve the parenchymal structure, and vice versâ. Obstructed circulation of the uterine vessels, however produced, will tend to metritis. Flexions and displacements of the womb will therefore cause it; so also will valvular diseases of the heart. It can often be traced to occupations which are sedentary, or which otherwise keep up pelvic congestions. Operators on sewing-machines worked by the foot are very liable to it, and so are shop-girls and other trades-women who have to be up and about during menstruation.

The symptoms are those of endometritis, with which it is generally associated, added to those of weight and of displacement. Complaint will be made of leucorrhœa and of pelvic dragging and bearing down, of difficult locomotion, rectal and vesical disturbance, mammary pain, usually under the left breast, menorrhagia, and, in short, of more or less of all those symptoms which are referred by the women themselves to diseases of the womb. Since the constitution is more impressed by this disease than by endometritis, the digestion becomes impaired, and the circulation faulty. There will, consequently, be loss of appetite, costiveness, flatus, cold

hands, cold feet, and spinal soreness and irritability. There will be dark circles around the eyes, and pigmentation of the skin, especially of that of the forehead and of the areola around the nipple. There will also be loss of hair, a uterine headache referred to the top of the head, and such disturbances of the nervous system as neurasthenia, hysteria and neuralgia. In bad cases the *facies uterina* will be well marked. The bimanual examination of the womb will show bulk, weight and soreness. The sound will give a measurement ranging from plus two and a half inches to four inches. The length, however, rarely exceeds three and a half inches. Flexions and displacements, mostly of the backward kind, are very common in metritis, and hardly a case does not show some degree of prolapse. Upon an examination by the speculum, the cervix will often prove so much enlarged as to fill up the lumen of the instrument—especially if it be a cylindrical one—and will give such characteristic signs of chronic endometritis as a muco-purulent discharge, a gaping and an angry-looking os, with frequently a collar of erosion around it. Very often the cervix will be found torn, and the everted mucous lining of its canal studded with distended Nabothian glands. They have a pearly look, and, if punctured, discharge a viscous fluid. In one case which had been operated upon for laceration of the cervix, Emmet found these glands converted into air-sacs, ranging in size from a millet-seed to a cherry-stone. When punctured, they collapsed with an explosive sound.*

**New York Medical Journal*, July, 1881.

LESSON XI.

LOCAL AND CONSTITUTIONAL TREATMENT OF CHRONIC METRITIS AND ENDOMETRITIS.

LOCAL TREATMENT.

SINCE chronic endometritis rarely exists without more or less of metritis, and since the latter disease is always associated with the former, the treatment of both is so essentially the same, that I shall group them together. I believe, indeed, that the physician who treats these diseases as co-existing, will be a far more successful practitioner than the one who singles out the one or the other, and addresses his remedies to it alone.

Just as a granular inflammation of the eye-lid is treated, so should be a chronic catarrh of the mucous lining of the womb—that is to say, while constitutional remedies are not neglected, the chief treatment should be a local one.

The following agents are much employed at the Clinic and the Dispensary of the University as local applications, and I can recommend them. They are enumerated in the order in which they are ordinarily used. The first on the list is one suggested by Dr. J. P. Thomas, of Pembroke, Ky.,* and called by him Iodized Chloral-Phenol. The formula of it is as follows:

℞. Iodinii resublimati,	℥ss.	
Acid. carbolic crystal,		
Chlorali,	aa	℥j. M.

The iodine and chloral are rubbed down into a powder in a glass or a porcelain mortar, and the carbolic acid, liquefied by heat, is then added.

Next come the undiluted commercial liquid carbolic acid

* *American Practitioner*, May, 1877, p. 287.

and Calvert's No. 4; a solution of one drachm of the silver nitrate to the ounce of glycerine; a saturated alcoholic tincture of iodine; a saturated ethereal tincture of iodine; fuming nitric acid; and the solid stick of lunar caustic.

With the exception of the solid caustic, each agent should be applied by means of a film of cotton wool wound evenly around about two inches of the aluminium applicator, beginning at its tip. Absorbent cotton is the best for this purpose; but jewelers' cotton, which is chemically cleaned, and has a long and fine fibre, answers very well.

These applicators are usually roughened at the tip, in order to give the cotton a hold which would prevent it from slipping off and remaining behind in the uterine cavity. This roughening, however, makes the subsequent removal of the cotton too tedious, and too liable to stain the fingers. I therefore prefer to use a smooth probe, taking care, in that case, to wrap the terminal end of the cotton very tightly. But, as this needs a skill which practice alone can give, it would be well for a beginner to make use at first of the roughened wire. The ordinary uterine sound can of course be resorted to for the same purpose; but the stronger acids soon corrode it, while the bulb at its tip makes the removal of the cotton a dirty and a difficult job. Should the cotton, slip off in the cavity of the womb, as will sometimes happen, its cervical end can often be caught by the uterine forceps and withdrawn; or it may be fished out with the tenaculum. But if these means fail, no more harm will accrue than a uterine colic which will force the cotton out. Some physicians, indeed, intentionally leave the cotton inside of the womb, expecting thus to get a more prolonged action;* but I cannot advise such a procedure.

The applicator thus armed, after being dipped into one of the above liquids, I always carry, through a speculum, up to the fundus of the womb whenever the internal os permits it to pass. In the great majority of cases this can be done, provided the fore-lip of the cervix is first hooked down by the

* Bantock, *British Gynaecological Journal*, May 1886, p. 35.

uterine tenaculum (Fig. 38); a procedure which steadies the womb and straightens it out. My reasons for cauterizing the whole mucous tract of the womb are fourfold: (*a*) If the mucous coat be alone involved, the symptoms often fail to inform me how far up the disease has extended: (*b*) Owing to the absence of any sub-mucous connective tissue, the inflammation of the mucous membrane must sooner or later more or less involve the parenchymatous structures, and this must be

FIG. 38.



avoided at all hazards. (*c*) Whenever the internal os is sufficiently patulous to admit the armed applicator, I accept this fact as an evidence that the disease is not limited to the cervix. (*d*) By this practice, in a measure empirical, I err on the safe side, and obtain far better results than I did when limiting my applications to the cervical canal. Nor is this bolder plan of topical medication more hazardous than the ordinary one limited to the cervical canal. Out of a yearly average of over three thousand uterine applications of this kind at the Hospital of the University, to say nothing of my own private patients, we have yet to hear of a death from this cause. Nor have we seen any but light and manageable attacks of uterine colic and peri-uterine inflammation, and these very seldom indeed. The cases in this clinic consist of out-patients, who, after an application, however strong, have necessarily to go home, many to adjacent towns lying within a radius of twenty miles.

From these facts and from our successes, I have come to the conclusion that he is the most successful gynecologist who is intelligently the most plucky, and that, no matter how severe or how mild the treatment of uterine disorders, the percentage of accidents will be about the same, and that a very low one. The only severe attack of perimetritis of which we have any knowledge, followed the application of

the solid stick of the silver nitrate merely to a patch of granular erosion on the cervix. In my private practice I have yet to see, from this cauterization of the whole mucous lining of the womb, any worse results than an occasional attack of uterine colic, but rarely so urgent as to require morphia hypodermically. Yet I wish distinctly to have it understood, that it is not every case of metritis and of endometritis that needs this treatment, or, indeed, any local treatment, but those only which exhibit true local symptoms, referable to the local disease alone. Year by year, I find myself treating patients more and more by constitutional measures, than by local ones; for I firmly believe that the importance of slight local lesions has been greatly overrated.

With the exception of that of the fuming nitric acid, the liquid applications are to be made once a week, and to be constantly changed about from one to another. In order to insure a thorough cauterization, it will often be advisable to make two or three applications, the one directly after the other, until the walls of the uterus are irritated into contracting down upon the probe, and griping it; and also, when the cervical canal is not very patulous, first to stretch it open by the uterine dilator. In making these applications no other care need be taken than, before removing the speculum, to swab out or syringe out the redundant portion of the fluid, which has run down over the hind lip of the cervix. But, in order to apply the nitric acid safely, greater precautions must be taken. The cervical canal, unless very patulous indeed, must be previously dilated, either by a tent or by the dilator, preferably by the latter. If the bivalve speculum be used, very great care should be observed to avoid touching the walls of the vagina with the acid. Whatever the speculum, water enough to reach to the lower margin of the os should be thrown into it, by that very handy little instrument, the uterine syringe (Fig. 39). Immediately after the application, several syringefuls of water should be projected upon the cervix. A tampon of cotton-wool, with a withdrawing thread attached, may then be

dipped into water and left for twelve hours in contact with the cervix. After ten days or two weeks have elapsed, one of the milder caustics may be applied. In stubborn cases of menorrhagia, I have sometimes found it needful to make a second application of this powerful acid. This, however, should not be done before a month has passed by, lest closure of the cervical canal should result. When granular erosion

FIG. 39.



is associated with a gaping or an everted os, there is no better treatment than by this acid. In such a case it must be applied freely to the cervical canal, and less so to the uterine cavity. In menorrhagia springing from a congestion or from a sub-involution of the womb; in cases of enlarged wombs obstinately resisting treatment; in persistent leucorrhœa, it does much good when boldly carried into the uterine cavity. I am partial to this escharotic, nor have I yet found that its use is followed by symptoms more urgent than those produced by the milder caustics. It has been urged that nitric acid will so far modify or injure the endometrium as to prevent conception. To this I can reply that I have twice by its use cured sterility, and that I have repeatedly seen pregnancy occur in women treated with it. In carrying this acid about, one caution must be carefully observed by the physician for his own protection, and that is to have a glass stopper to the bottle. For, if a cork be used or a rubber stopper, the acid, coming in contact with it and decomposing it, generates a gas which may, upon the quick removal of the stopper violently force a fine spray of the contents out of the bottle.

The solid stick of silver nitrate is no great favorite of mine. It gives more pain than the liquid preparation, is less manageable, and often causes a hemorrhage. Its prolonged use is so liable to be followed by a hard, gristly cervix, or by contrac-

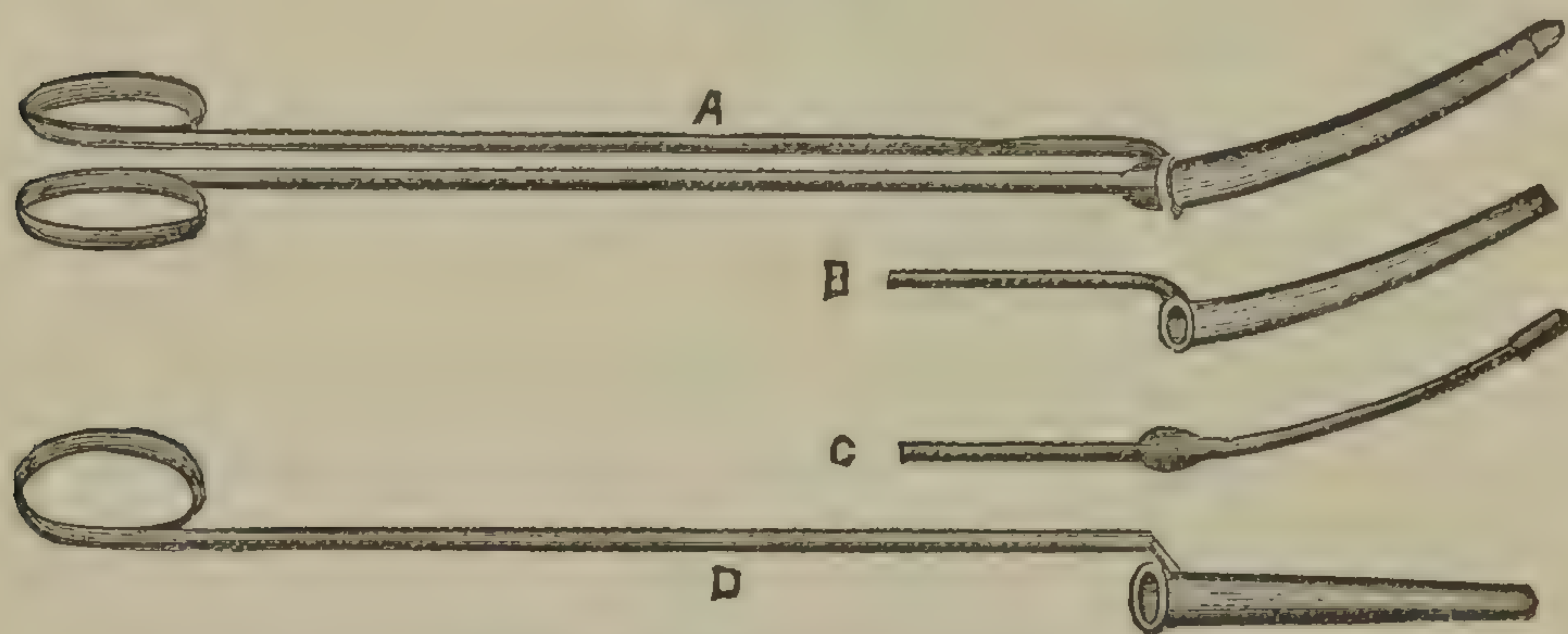
tion, or even by closure of the cervical canal, that it is restricted pretty much to those cases in which the os is gaping or is everted, but not lacerated. By first warming the tips of the aluminium probes, and then dipping them into fused silver nitrate, they receive a coating of the caustic which can be readily passed up into the uterine cavity and dissolved there; not, however, without considerable uterine colic. A common test-tube held over the flame of a candle is all the apparatus needful for the purpose. This is an admirable way of treating sub-involution and other affections of the body of the womb. In stubborn cases of amenorrhœa advantage may thus be taken of its tendency to excite hemorrhage. Whenever this caustic is passed up into the uterine cavity, the hypodermic syringe should be within reach.

A saturated ethereal tincture of iodine, being much stronger than the corresponding alcoholic tincture, I have found very useful in very marked cases of cervical endometritis. But the fear lest the subtle vapor of the ether should escape through the oviducts into the peritoneal cavity, or should force in some of the liquid before it, has made me chary of introducing it into the uterine cavity.

Intra-uterine injections are very efficacious remedies in the treatment of diseases of the body of the womb, but, for reasons not yet well understood, they are liable to be followed by very dangerous symptoms, such as severe uterine colic, collapse, and rapid peritonitis. Death has repeatedly resulted from them. For these reasons I long avoided their use; but of late I have in obstinate cases been resorting to them with much satisfaction. In applying them I use a very small hard-rubber syringe, holding, when full, but twelve drops, which are discharged in fine jets through a number of minute holes in the sides of the nozzle. With this I inject at one time from about six to twelve drops of any one of the applications previously mentioned. But in using the fuming nitric acid, the syringe is first charged, and the holes in the nozzle are next wrapped over with a very thin film of absorbent cotton. The nozzle is now passed up to the fundus, the piston pushed home, and the cotton merely moistened by the acid.

In this manner the endometrium is thoroughly cauterized, without the dangerous presence of a corrosive fluid lying free in its cavity. As a rule, however, in order to save my syringe, I prefer to introduce the nitric acid by means of the applicator, which, to guard the cervical canal from cauterization, is passed up through a platinum tube. The one that I prefer was devised by my friend and former pupil, Dr. A. B. Stoops, of Moorefield, Ky. (Fig. 40).

FIG. 40.



STOOPS'S UTERINE CANULA.

A. Instrument ready for insertion.

B. Canula.

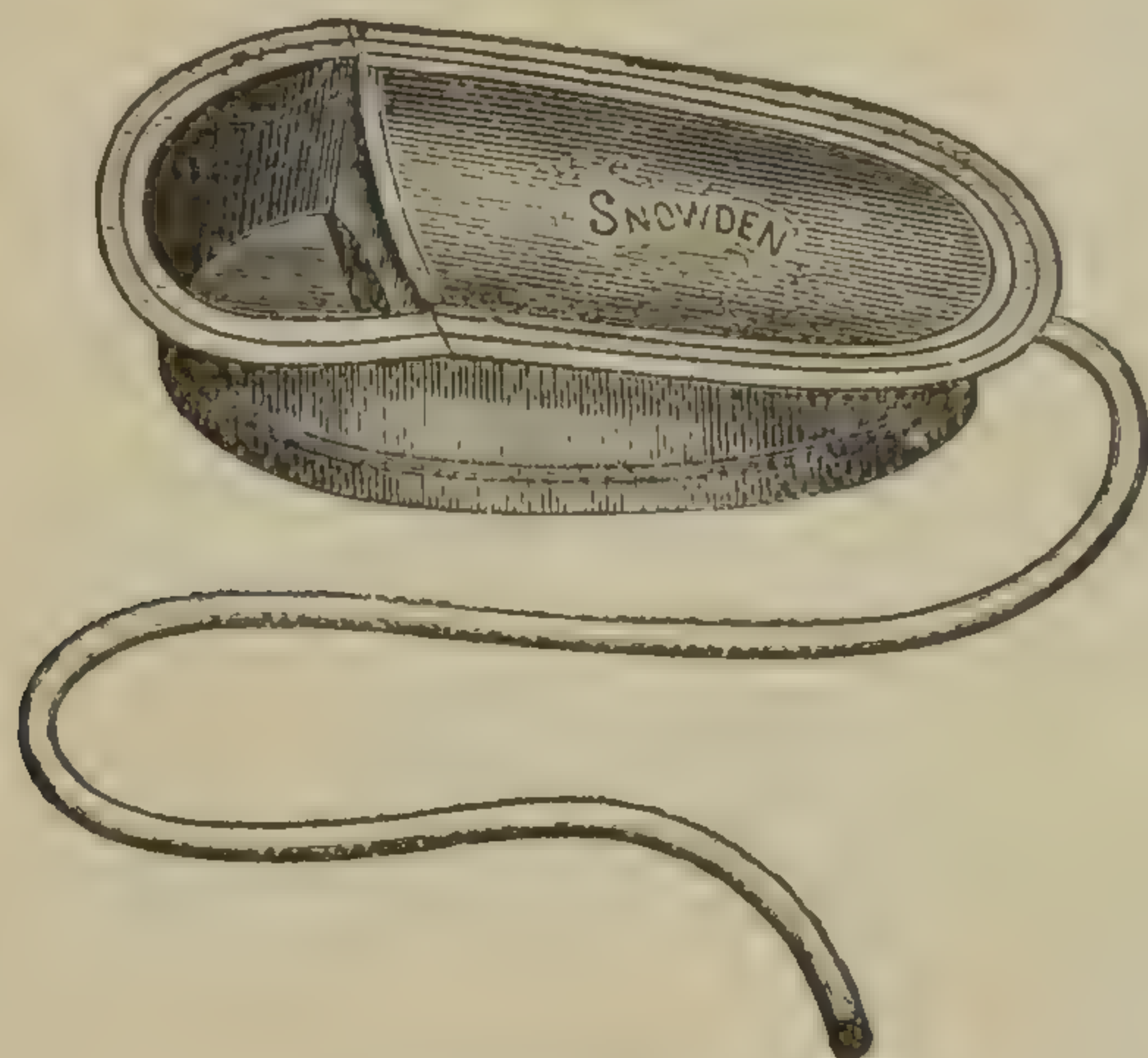
C. Stilette.

D. Canula lying on its right side, showing the angle of its attachment to the handle.

All ordinary applications should be made about once a week, and the stronger ones at much longer intervals. In the meantime the woman should herself daily irrigate the womb with tannin, lead, or zinc solutions—one drachm to the quart of water. A very excellent wash is a warm tea of walnut leaves, or an infusion of flax-seed or of slippery elm bark, to every quart of which two drachms of potassium chlorate or of common salt may be added. A gallon of water, as hot as can be borne,—viz., at a temperature of from 105° to 120° —thrown up twice daily on the cervix uteri, is an excellent remedy, for which, as well as for many other valuable hints, we are indebted to Dr. Emmet. For making these vaginal injections Davidson's syringe with a nozzle of hard rubber, is the best; but when the quantity of fluid to be in-

jected is large, many ladies prefer the Fountain Syringe, which works by gravity, and needs no muscular exertion. It consists simply of a bucket or of a rubber bag, with a long tube attached, and is used by being suspended from a nail. To carry off the water as fast as it flows out of the vagina, a useful douche-pan is made by Wm. Snowden, which is practically a bed-pan with a waste-attachment. An excellent

FIG. 41.



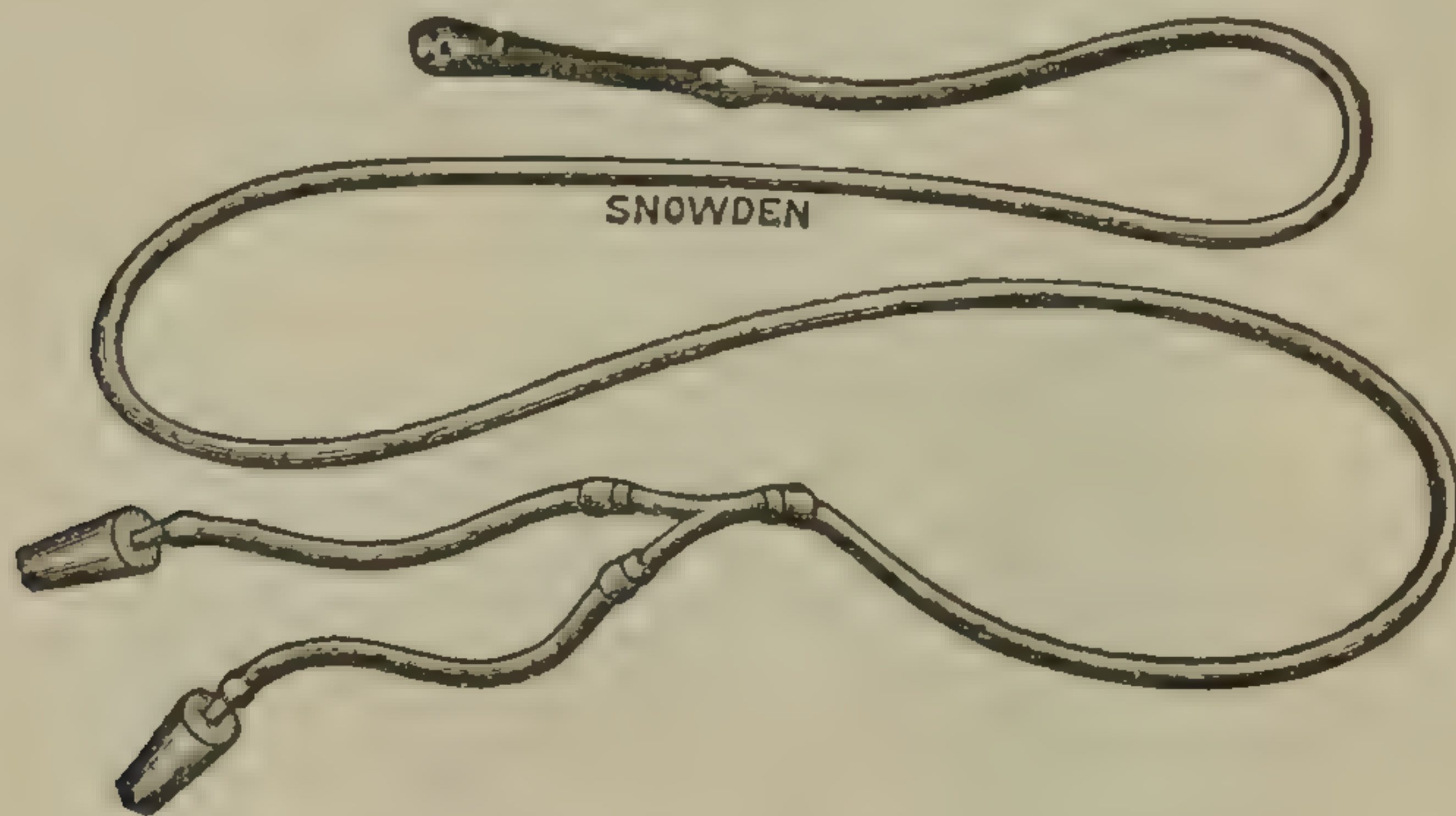
DOUCHE-PAN.

“Vaginal Irrigator” has also been devised by Dr. T. M. Healey, of Cumberland Md. To utilize the bath-tub of our houses, Dr. G. E. Shoemaker has contrived a very simple and useful appliance. It consists of rubber tubing in the form of the letter “Y,” armed at one end by an ordinary syringe nozzle, and at the ends of the branches by rubber corks which fit respectively into the hot- and cold-water faucets of the ordinary bath-tub (Fig. 42).

A still better treatment is the introduction, at bedtime, into the vagina, of a suppository containing a few grains of the acetate or the iodide of lead, of the zinc sulphate, or what is better, from five to ten grains of tannic acid. For obstinate congestions, apart from local depletion, one drachm of the fluid extract of ergot, or an equivalent dose of one of its preparations, should be nightly introduced into the rectum, either by a suppository or by a starch clyster. As vaginal suppositories are expensive and withal quite difficult to make,

certain very efficient substitutes can be extemporized. For instance, the tannin or any other dry astringent powder may be projected by the woman herself upon the cervix, through the nozzle of one of those ingenious tin bellows which are

FIG. 42.



SHOEMAKER'S VAGINAL DOUCHE.

imported from France for the purpose of scattering insect powder about. Or else—after the plan of my friend, Dr. E. L. Duer—a teaspoonful of glycerine containing five grains or more of tannin, of lead acetate, or of zinc sulphate, may be poured into a hollow pressed by the thumb into the centre of a thin sheet of ordinary cotton-wool not quite so broad as one's palm. The edges being now gathered up and securely tied, there will be formed a small and dry tampon, which the woman, after getting into bed, can herself push against the cervix. For convenience of removal, the ends of the string should be left long enough to hang outside of the vulva. Medication by vaginal suppositories is to be preferred to that by vaginal injections, because in the former the remedy lies longer in contact with the cervix, and because it is probable that more or less of it is carried up directly into the uterine cavity, either by capillary attraction or by that reversed peristaltic, or suction, action of the uterine fibres so lately described. In future, when the vaginal suppository is mentioned, the term will mean, indifferently, some one of the above methods.

When chronic metritis is very marked, a still more vigorous treatment will be needful. If the cervix be torn, it

should be repaired. Distended cervical glands should be freely opened, and their cavity cauterized by one of the foregoing applying fluids, or by a finely-pointed piece of the silver nitrate. Great relief to local pains and aches will often follow this little operation, and I have had frequently to repeat it in the same patient. The endometrium should be gently scraped with the curette, in order to remove any existing vegetations, which keep up both the leucorrhœa and the menorrhagia. The mode of doing this I shall reserve for another lesson. All flexions and displacements must be remedied by the proper kind of pessary. The whole cervical surface may be blistered by cantharidal collodion, or small issues may be made by two or three punctures into which a small piece of silver nitrate is pushed in.

The sores or the raw surfaces thus made, are, from time to time, to be gently touched by carbolic acid or by a mild solution of the silver nitrate until they heal up. Interstitial injections into the cervix uteri by means of a long-nozzled hypodermic syringe are said to be followed by great benefit; but I have not yet tried them. Solutions of ergotine have thus been injected with great benefit. Bennet writes very highly of the following solution:

R. Iodi,	
Potassii bromidi,	aa gr.xx.
Tincturæ iodi,	f. 3j.
Aquam destillatam ad	f. 3 iv. M.

Of this he injects an hypodermic syringe-ful by from three to five punctures into the cervix. A cotton pledget well soaked in glycerine is placed against the cervix, and rest for at least twelve hours is enforced.*

I am more than ever impressed with the fact, that in general, the caustic applications are made too continuously for nature to have fair play, and that irritation and congestion are actually kept up by too short intervals of rest. It is therefore my rule, after making from four to six applications,

* *Dublin Journal of Medical Science*, Oct., 1878.

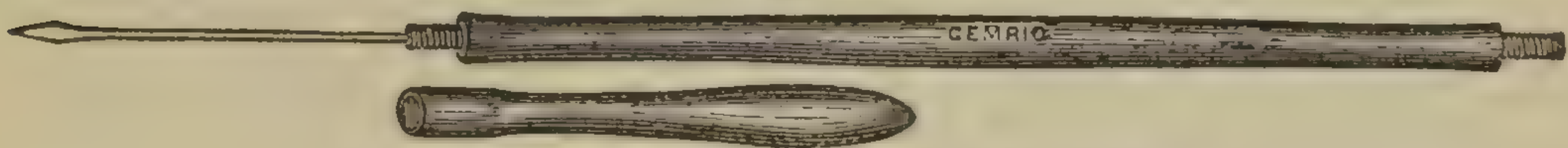
each a week apart, to send my patient away just before a catamenial period, with directions not to return until two such have passed. Not only will much be gained by this intermission in the treatment, but an opportunity for impregnation is thus given.

With regard to the conjugal relations during local treatment, while, as a rule, abstinence is recommended, I yet sanction the advice of the apostle, that "the husband render unto the wife due benevolence; and likewise also the wife unto the husband." While coition should always be completely performed, on the one hand, the husband must not be too exacting; on the other, the wife should not restrain her own inclinations; for intercourse, then, appeases the congestive orgasm of the reproductive apparatus. Beside this, pregnancy is often curative of these disorders. For, just as a fibroid tumor will sometimes, after labor, disappear by absorption or take on atrophy, so will the tissue changes of chronic metritis; especially if during child-bed every means be used to promote involution.

Local Depletion.—Since persistent congestion is the essential basis, the *punctum saliens* of uterine disorders, it stands to reason that local blood-letting should be the remedy. Whenever, therefore, the cervix has lost its natural pink, or its gum-like color, and becomes crimson, it needs depletion. For this purpose nothing answers better in the end than two or three leeches pushed up to the cervix through a glass speculum. In leeching, the os uteri must first be well plugged by a clean morsel of cotton, with a withdrawing thread attached; otherwise a leech may creep into the uterine cavity and fasten itself there, giving intolerable anguish. The week succeeding the catamenial flux is always the best time for their application. But leeches are often capricious, always expensive, sometimes unattainable, and their application is a tedious and an unpleasant job. A substitute is therefore necessary. In lieu thereof, once a week or a fortnight, the cervix may be punctured at three or more points by Buttle's spear-pointed scarificator (Fig. 43), by a straight-pointed bistoury, or by a

tenotomy knife. Not more than from two to four tablespoonfuls need be taken at one time. The difficulty usually consists in drawing blood enough, but occasionally too much will flow. I have seen it spout out as if a large vein had been struck. It is well, therefore, to watch for a moment the first puncture before making others. In a large, flabby and angry-looking cervix, in cases of retroflexion accompanied by marked congestion, blood enough will often escape from but one superficial puncture. In firmer and paler cervixes the punctures must be made deeper and more numerous. The point of the instrument should penetrate to a depth of from

FIG. 43.



BUTTLE'S SPEAR-POINTED SCARIFICATOR.

one-eighth to one-quarter of an inch; and, in order to enlarge the opening, should be withdrawn by a slight turn of the wrist. To collect the blood as it flows out of the speculum, without soiling the clothes of the patient, I have found nothing so convenient as an ordinary kitchen gravy-ladle of tinned iron, which has its well-earned place in my leather bag.

After the bleeding has ceased, the uterine application is to be made. If it persists, a stream of cold water may be thrown upon the cervix, or each bleeding point can be touched with the solid stick of the silver nitrate. Often the mere introduction of the ordinary application into the uterine neck and cavity will so condense the tissues as to stop the bleeding. On very rare occasions I have been obliged to tampon the vagina loosely with cotton-wool dipped in a solution of the iron subsulphate. Local depletion is a very important adjunct to the treatment of uterine diseases. It is, indeed, often the pith of the treatment. Its neglect is a common cause of failure. The condition of the cervix is not, however, always an infallible criterion as to the necessity for drawing blood, for the congestion of the womb may be lim-

ited to its body. Depletion, may, therefore, in general be resorted to whenever the womb is hypertrophied; whenever its body is tender to the touch, or too sensitive to bear the pressure of a pessary; whenever pelvic pains resist the ordinary treatment; and, finally, in congestive cases of flexion or of dysmenorrhæa. No inflexible rule can be laid down with regard to the number of times this operation should be performed. My own custom is to draw blood at intervals of a week or two, until the general or the local symptoms are decidedly improved.

The congestion can also be relieved by daily vaginal injections of large quantities of water as hot as can be borne—from 105° to 120° . Occasionally, injections of cold water will answer still better, and may with advantage be used in the place of the former.

CONSTITUTIONAL TREATMENT.

One cardinal rule in the treatment of all uterine disorders is the internal administration of iron, and of other tonics, unless contra-indicated. To these may be added, whenever the womb as a whole is congested or is hypertrophied, ergot, quinia, arsenic, or potassium bromide, either singly, or more or less in combination. Whenever one of my patients can or will take cod-liver oil in conjunction with the syrup of the iron iodide, I feel that half the battle is won. The bowels should be kept soluble. Excellent pills for this purpose, to be taken at bedtime, are:

R. Ext. colocynth. comp.,	gr. ij.	
Ext. belladonnæ,	gr. $\frac{1}{3}$.	
Ext. gentianæ,	gr. j.	
Ol. carui,	gtt. ss.	M.
Et. ft. pil., No. j.		

R. Podophylli resinæ,	gr. ij	
Quiniæ sulphatis,		
Ext. aloës,	aa gr. viij.	
Fellis bovini,	gr. xvj.	M.
Et. ft. pil., No. xvj.		

The pulvis glycyrrhizæ compositus is another good laxa-

tive, to which may be advantageously added potassium bitartrate.

The Lady Webster pill also is peculiarly suited to many of these cases of obstinate costiveness. Two or three pills may be given at bed-time. For the following formula for an excellent aperient pill I am indebted to my friend Dr. R. A. Cleemann:

R. Aloës,	gr. xxx.	
Ext. belladonnæ,	gr. ij.	
Ext. ignatiæ,	gr. vj.	M.
Et. ft. pil., No. xij.		
Sig.—One pill at bed-time.		

The following tonic pills are much prescribed at the clinic:

R. Acid. arseniosi,		
Strychninæ sulph.,	aa	gr. $\frac{1}{35}$.
Ext. belladonnæ,		gr. $\frac{1}{5}$.
Cinchoniæ sulph.,		gr. iss.
Pil. ferri carb.,		gr. ijss.
		M.
Et. ft. pil., No. j.		

R. Acid. arseniosi,		
Cinchoniæ sulph.,		gr. $\frac{1}{35}$.
Ferri et potass. tart.,		gr. iss.
		gr. ij.
		M.
Et. ft. pil., No. j.		

R. Pulv. ferri sulphat. exsicc.,		gr. xxx.
Zinci sulphat.,		
Quininæ sulphat.,		
Ext. hyoscyami,		
Ext. ignatiæ,	aa	gr. xv.
		M.
Et. ft. pil., No. xxx.		

The sulphate of cinchonia in two of these formulas may be advantageously substituted by a proportionate dose of sulphate of quinia, the former being used simply on account of its cheapness. One pill may be given after each meal.

A mixture to which I am very partial consists of one part of Fowler's solution of arsenic to nine of the syrup of the iodide of iron. Of this ten drops, in a sufficient quantity of water, are given after each meal, on the first day; eleven drops after each meal on the second day; twelve drops after each meal on the third day, and so on, until, on the twentieth

day, thirty drops after each meal are reached. The medicine is now kept up for a week or two at thirty drops after each meal. Then, the dose is lessened daily by one drop, in the same way as it was increased, until ten drops are reached, when the medicine is discontinued. The only objection to this mixture is its liability to discolor the teeth temporarily, but it does not injure them like the ferric chloride.

Basham's iron mixture, with the addition of fractional doses of strychnia, will be found very admirable in its effects. There are so many indifferent recipes for making this celebrated mixture, that I shall here give the one which seems to me to be the best:

R. Tinct. ferri chloridi,	fl. ℥ ij.	
Acid. acetici diluti,	fl. ℥ss.	
Liquor. ammoniæ acetat.,	fl. ℥ ijss.	
Curaçœ,		
Syrupi simplicis,	aa fl. ℥ j.	
Aquam ad	fl. ℥ viij.	M.
Sig.—One tablespoonful after each meal.		

The following formula makes another very elegant and generally useful preparation of iron:

R. Tinct. ferri chloridi,	fl. ℥ ij.
Acidi phosphorici diluti,	fl. ℥ iij.
Spts. limonis,	fl. ℥ j.
Syrupi simplicis,	fl. ℥ ijss.
Aquam ad	fl. ℥ vj.
Sig.—One tablespoonful after each meal.	

The dilute phosphoric acid is added, both because it is a valuable nerve tonic, and because it has the property of disguising the styptic taste of the iron; so much so, that children readily take this mixture.

There are two other tonic preparations which we prescribe very frequently in this clinic, and with capital results. One of them is Blaud's pill, which Niemeyer extols so very highly:

R. Pulv. ferri sulphat. exsicc.,	
Potass. carb. puræ,	aa ℥ ij.
Glucose	q. s.
Ut fiat massa dividenda in pilulas, No. xlviij.	

During the first three days, one pill is to be taken after each meal. On the fourth day, four pills are taken during the day. On the fifth day, five pills; on the sixth day, six—that is to say, two pills after each meal. For three days more, six pills are taken daily; then the dose is to be increased by one pill daily, until three pills are taken after each meal. On this final dose the patient is kept for three or four weeks—as the case may be. In stubborn cases I have occasionally run up the dose to the number of five pills thrice daily, and have seen no other bad effects from it than a feeling of fullness in the head. This immunity is probably owing to the conversion of the iron sulphate into a carbonate.

The other preparation is a valuable alterative tonic, for the formula of which I am indebted to the late Dr. A. H. Smith;

R. Hydrarg. chloridi corrosivi,	gr. j-ij.
Liq. arsenici chloridi,	gtt. xlviij.
Tinct. ferri chloridi,	
Acid. hydrochlorici dil.,	aa f. ℥ iv.
Syrupi,	f. ℥ iij.
Aquam ad	f. ℥ vj. M.

Sig.—One dessertspoonful in a wineglassful of water after each meal.

Anæmic and chlorotic patients will fatten and thrive well on this mixture. I call it the “Mixture of Four Chlorides.” It should not be given for a longer period than two weeks at a time.

When patients complain of nervousness or of sleeplessness the bromides must be given, either alone or in combination with other remedies. They indeed constitute in uterine troubles our main stand-by; for apart from their soothing qualities, they seem to divert the blood from the womb and to lessen the congestion. A cheap mixture, much thought of by our patients at the University clinic, is as follows:

R. Pulv. ferri sulphat. exsicc.,	gr. xxxij.
Potassii bromidi,	℥ vj.
Rad. zingiberis contus.	
Rad. calumbæ contus.,	aa ℥ j.
Aquæ bullientis,	Oj.

Steep for twenty-four hours and then strain.

Sig.—One tablespoonful in a wineglassful of water, just before or just after each meal.

I cannot say much for the palatableness of this infusion, nor more for its pharmaceutical elegance; but it does good, and we therefore give it largely to our poor patients. The iron and the potash in it may be increased or lessened, or the former may be left out, according to the needs of the case. The compound infusion of gentian makes a more pleasant vehicle for administering the bromide, but it is more expensive. A very good combination is as follows:

R. Ammonii chloridi,	℥ij.	
Ammonii bromidi,	℥iv.	
Tinct. gentianæ compositæ,		
Aquæ,	aa	f.℥iij. M.

Sig.—One dessertspoonful before meals.

Another very excellent formula is :

R. Potass. bromidi,	℥iv.
Ammonii bromidi,	℥ij.
Spts. ammoniæ aromat.,	f.℥vj.
Aquam camphoræ, ad	f.℥vj.

Sig.—One tablespoonful before breakfast and dinner, and one at bed-time.

For nervous and anæmic cases my most favorite pill is:

R. Acidi arseniosi,	gr. $\frac{1}{40}$.	
Ext. sumbuli		
Ferri sulph. exsiccant,	aa	gr.j.
Asafœtidæ		gr.ij. M.

Et fiat pilula, No. j.

Sig.—One pill after each meal,—to be increased to six pills a day.

Messrs. Bullock & Crenshaw have included this among their sugar-coated pills, for asafœtida eminently needs some disguise, and I prescribe many thousands of them every year.

Another valuable prescription, which I gleaned from some foreign journal is:

R. Zinci valerianat,		
Quininæ valerianat,		
Ferri valerianat,	aa	gr.j. M.

Et fiat pilula, No. j.

Sig.—One after each meal.

I call it the "Pill of Three Valerianates."

For wakefulness and for general nervousness the following

anti-spasmodic mixture can be prescribed with very general satisfaction:

R. Elixir. humuli,	f. ℥j.	
Elixir. ammoniæ valerianat.,		
Syrupi lactucarii,	āā f. ℥ss.	M.

Sig.—One dessertspoonful at bedtime, or during the day when need-
ful.

When ergot is indicated, it may be given continuously and in full doses, either by the mouth or by the rectum. The suppository is made by inspissating the fluid extract by a moderate heat, and incorporating it with cocoa butter. Of these two modes of administration I much prefer the latter, as it does not disturb the stomach. In country practice the ergot may be given in a starch clyster.

In addition to these remedies, an effort should be made to distract patients from self, and to make them forget that they are invalids. Their tendency is to give too much heed to every little ailment. They should be urged to give up the recumbent posture, to take regular exercise, and to expose themselves, without veils and parasols, to the direct rays of the morning sun. Woman, as well as plants, needs sunshine. Tea and coffee should be given up, and milk and malt or claret substituted. A wholesome diet of easily-digested meats and vegetables should be ordered, pastry interdicted, and the old adage inculcated of “early to bed and early to rise.” A moderately cool bath may be taken daily, provided no great fatigue is induced by it and a healthy glow follows its use. The brisk rubbing down after a cool bath, by putting many muscles into play, is one means of furtively giving exercise to those patients who are indisposed to take it as such. The corset should be discarded; the clothes must fit loosely and be supported from the shoulders, as in some of the dress-reforms. However unreasonable this advice may have seemed to the woman while her health was good, she will now usually adopt it, but not without many a pang and many an inward struggle. No vanquished knight ever yielded up his armor with worse grace.

For obvious reasons, when young girls or unmarried women exhibit symptoms of uterine trouble, an examination by the finger or by the speculum, or a treatment requiring the use of the latter, should never be insisted upon, until other measures have first been faithfully tried. These measures will be limited to the hygienic and constitutional treatment just detailed, and to such local remedies as the patient herself can use—viz., the hot douche, the hip bath, vaginal suppositories, vaginal injections, etc. I urge this advice because, as you will learn later, in the great majority of such cases the apparent uterine disorders are mimicries, and not entities. In stubborn or in doubtful cases all the needful information may often be gained from supra-pubic palpation conjoined with a rectal examination.

LESSON XII.

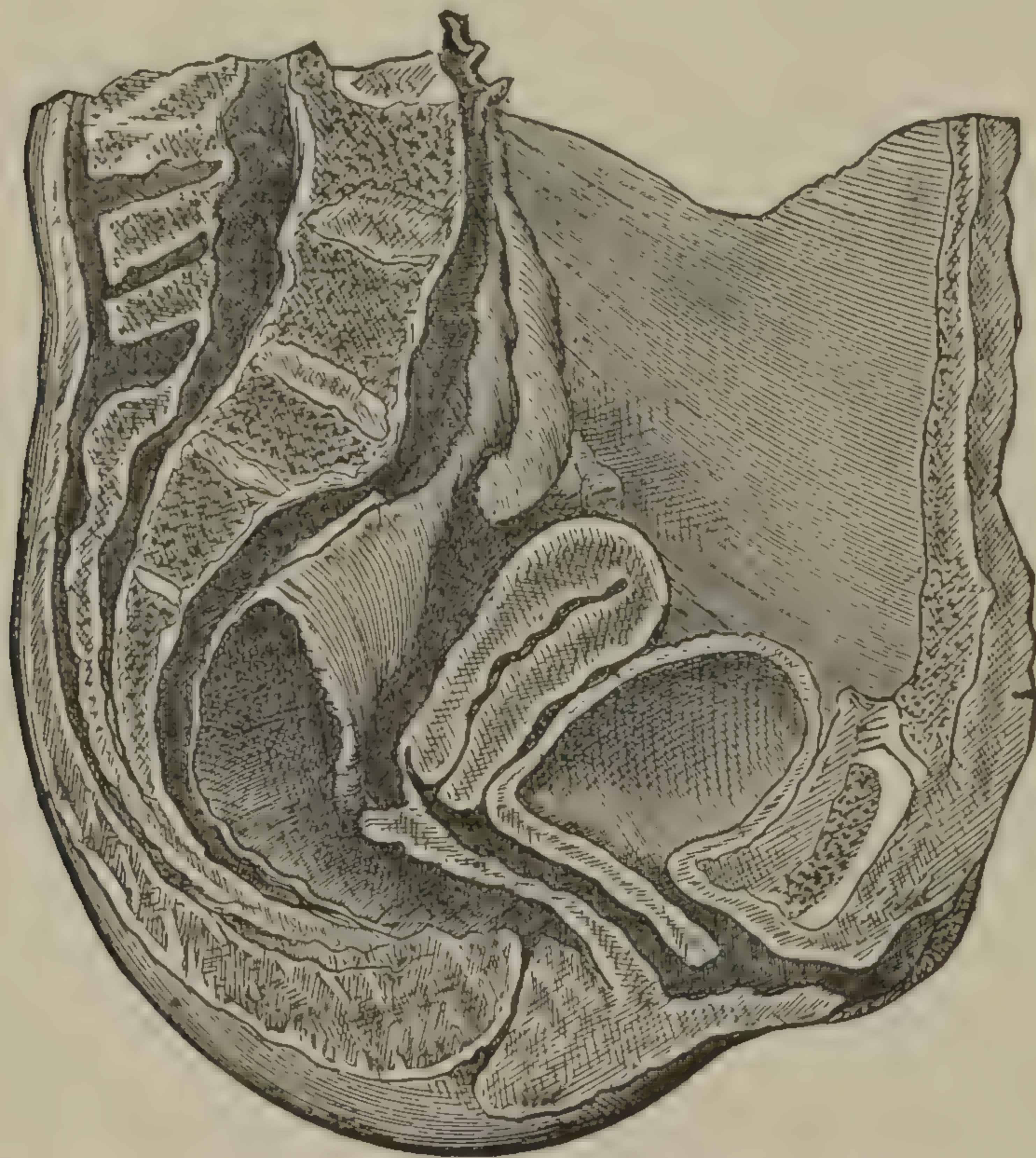
THE NATURAL POSITION OF THE WOMB; RETROVERSION AND RETROFLEXION OF THE WOMB

THE NATURAL POSITION OF THE WOMB.

THE womb, from its lax ligaments and its loose attachments, is an unstable organ, responding to every act of inspiration and of expiration, and to every movement of the body. It is also displaced forward by a loaded rectum and backward by a full bladder. The consequence is that its exact natural position in the pelvis has not yet been determined, not even by frozen sections of the body; for no two of them wholly agree. As far as can be ascertained, the fundus of the typical womb should be on a level with the plane of the superior strait, and its os externum should touch a line drawn from the lower surface of the symphysis pubis to the lower margin of the fourth sacral vertebra (Fig. 44). When the bladder and rectum are empty, the fundus will be found inclined to and close to the pubic symphysis, and the cervix looking toward the sacrum. The axis of the womb then lies very nearly at a right angle to that of the vagina—viz., to the axis of examination. It is also bent slightly forward, with a lateral deviation to the right, which it gets from the presence of the rectum on the left side of the pelvis. Were this axis prolonged anteriorly, it would pierce the abdominal wall at a point midway between the symphysis pubis and the umbilicus, but a little to the right of the linea alba. Slight variations from this position and from this axis of the womb are constantly met with, without any pathological significance whatever. But marked deviations are also as liable to take place, and they are almost always attended by symptoms which loudly call for relief. These pathological deviations

in the position and in the axis of the womb, are downward, or forward, or backward, or to one side. To these I shall now direct your attention.

FIG. 44.



NATURAL POSITION OF THE WOMB WHEN THE BLADDER IS FULL.
AFTER BRIESKY.

RETROVERSION AND RETROFLEXION OF THE WOMB.

By a retroversion of the womb, we understand a backward tilting of the fundus towards the sacrum, and an advance of the cervix towards the pubes—that is to say, it is a posterior inclination of the body of the womb without any bend in its axis. By a retroflexion of the womb is meant a backward bending of the womb upon itself, the fundus upon the cervix posteriorly.

These displacements are generally due to the increased weight and size of the womb, which its ligaments and other supports cannot sustain, and to a loss of tonicity in the uterine

wall, by which it bends upon itself. Arrest of involution after labor is, therefore, the most important factor in their production. While then they are occasionally found in unmarried and in sterile women, they usually occur in women who have borne children, and date from some one of their labors.

The symptoms being those of chronic metritis, are therefore not at all pathognomonic. A physical examination will alone reveal the true condition. By the finger, the cervix will, in retroversions, be found raised up behind the symphysis pubis, and in retroflexions, lying more or less in the axis of the vagina. Through the posterior cul-de-sac of the vagina will be felt a round and sensitive tumor, continuous with the cervix. It is the fundus of the retroflexed, or of the retroverted womb, lying low down in Douglas's pouch. This tumor, however, might be a sub-peritoneal fibroid on the hind wall of the womb, an accumulation of feces, a collection of blood from an hæmatocele; a prolapsed ovary, or the plastic deposits of peri-uterine inflammation. To tell the displaced womb from these conditions, needs a digital examination per rectum, and a careful exploration with the uterine sound. The finger by indenting the mass will recognize a collection of feces; but the sound is the only sure means of making out a diagnosis. It will enter with its concavity looking backward, and its handle well raised. Its introduction can be facilitated very much, either by hooking down the cervix with the uterine tenaculum, or by lifting up the fundus of the womb with a finger passed either into the rectum or into the vagina. The final test is made by restoring the womb to its natural bend and position. This is done by giving the tip of the sound the smallest curve compatible with its introduction, and by reversing this curve within the uterine cavity so that it shall look forward. This reversal is best effected, not by turning the sound on its axis, which generally will then merely twist the womb; but by sweeping the handle of the sound around the vulva in a half circle with the largest possible radius, until the shaft presses upon the

perineum and the concavity given to its tip looks forward. If by this manœuvre the tumor be so raised up out of Douglas's pouch as to slip away from the vaginal finger, and to be felt by the supra-pubic hand, the conclusion is inevitable that the tumor is the fundus of the womb. The character of the displacement, whether a retroversion or a retroflexion, will be told by the position of the cervix, which in the former will be found behind the symphysis, and by the post-cervical sulcus, or furrow, always found in the latter.

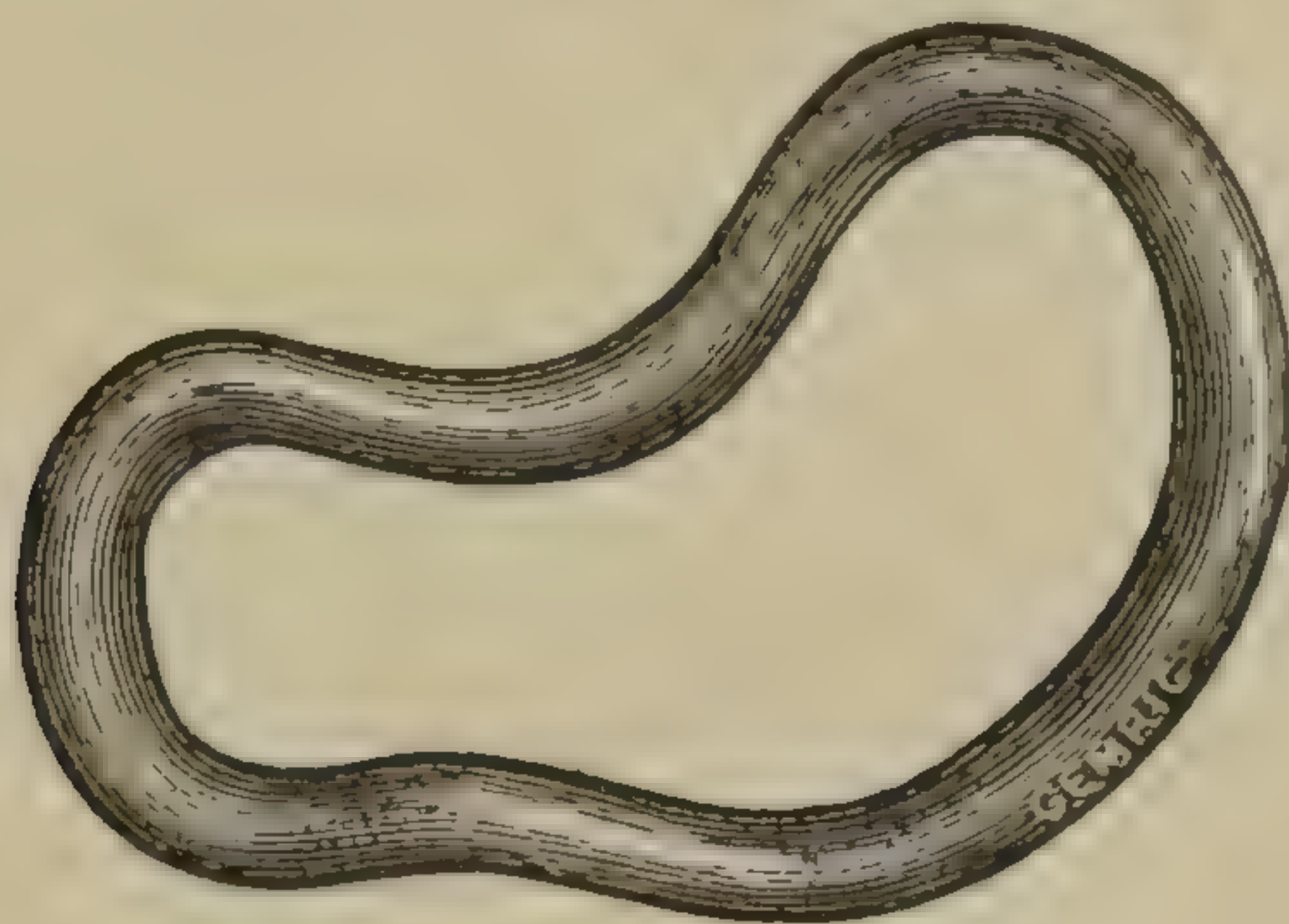
Both displacements are occasionally congenital, but when acquired, the development of a retroflexion is always slow, and so usually is that of a retroversion. Once in a while, however, the empty womb or a gravid one will be suddenly thrown into a state of retroversion, and remain so unless replaced. I have seen this follow an unexpected succussion, such as a misstep or a violent fit of coughing, when the bladder was over-full by a long day's travel. The fundus of the womb then gets pushed backward below the sacral promontory, by which it is caught, and the woman finds herself in great pain, and unable to pass her water.

It is rare to meet with a pure case of retroversion—that is, one without some degree of flexion—and so rare to meet a case of retroflexion, without its being complicated with more or less of version, that both of these displacements can be treated in pretty much the same manner. In these displacements, by the obstruction at the point of flexion, or by the fundus being often lower than the cervix, the natural secretions and excretions, such as mucus and the menstrual fluids, are retained longer than they should be. This irritates the womb, distends its cavity, and augments the discharges. Hence we have leucorrhœa and menorrhagia.

Then again, the circulation being impeded by gravity and by angulation, congestion takes place, the local nutrition becomes undue, and diffuse growth, or proliferation, of the connective tissue takes place. Hence the uterine walls become thickened and dense, and the nerves compressed. In this way the pain, the tenderness and the sense of “bearing down,” are explainable.

Now, it stands to reason that whatever reduces these dislocations and keeps them reduced, also tends to cure the effects of these dislocations. Hence, for remedying these two kinds of lesions, pessaries are indispensable, and of all of them Hodge's closed-lever pessary is one of the best (Fig. 45).

FIG. 45.



HODGE'S PESSARY.

When fitting properly, it acts physiologically by propping up the dislocated fundus, and restoring the posterior wall of the vagina to its natural length. Again, since its anterior bar plants itself firmly against the posterior surface of the pubic symphysis, or against the angle formed by the converging rami of the pubic bones, it offers a very efficient and powerful support. It will not, however, always answer. Whenever the relaxation of the parts is great, or the vaginal portion of the cervix has disappeared—as it sometimes will through senile atrophy, or through the stripping off of the vagina by the upward traction of the womb in repeated pregnancies—the physician may be driven to the globe-pessary, or to the ring-pessary. But this alternative should be deemed a misfortune, for all pessaries which distend the vagina at the expense of its length are mere makeshifts. Such instruments cannot effect a cure, because, by overstretching the vagina laterally, and by thus impairing its tonicity, they weaken this important supporting column of the uterus, and, in prolapse, tend to confirm the usual cause of the displacement. Further, the ring-pessary is not trustworthy, and needs watching; for it is liable, by its elastic pressure, to excite ul-

ceration, and to become buried up by over-arching granulations. In this manner it sometimes eats its way into the bladder or the rectum. There are few physicians with a large uterine practice who have not had to dissect out a ring vitally imbedded in the walls of the vagina.

Another very great objection lies in the fact that, when made of poor and brittle rubber, as these pessaries usually are, they crack at one place or more during the process of their introduction; and then, sooner or later, by the rusting of the steel wire at these points, they spring open. This accident I have so repeatedly seen as to make me timid about using them. The ring-pessaries now made with whalebone, instead of with a watch-spring, are not open to this objection. When the base and the neck of the bladder are very sensitive, or when, as in some old women, the vagina has lost its elasticity and is shortened, Cutter's pessary answers a very admirable purpose. It is practically a Hodge pessary, having an external fulcrum attached by an elastic band to an abdominal belt.

The late Dr. Albert H. Smith made a modification of Hodge's pessary to which I am very partial, the more so because it meets several very important indications. The healthy vagina is a cone-shaped tube, widening out above and narrowing down as it approaches the vulva. Its uterine portion is thin, membranous, and almost devoid of muscular fibre; while its lower portion is rich in elastic and muscular tissues, and is also powerfully acted upon by the strong muscles of the perineum. Now, Hodge's pessary being of a uniform width throughout, in fact a parallelogram in shape, will often unduly stretch laterally the vulvar, viz., the narrowest, portion of the vagina, while it too loosely fits the uterine portion. The pressure being unequally distributed, is liable not only to irritate the points of firmer contact, but also to cause the pessary to tilt over on its side, or to become otherwise displaced. Again, its front bar, by pressing upon the pubic bones, may irritate the overlying soft parts, and may also so compress the urethra as to make micturition

painful. To avoid these defects, and also to distribute the pressure in front over the surface of the anterior vaginal wall, which responds to the movements of the diaphragm, Dr. Smith slightly narrowed this pessary anteriorly, and then bent the tip thus rounded sharply downwards, at almost a right angle.

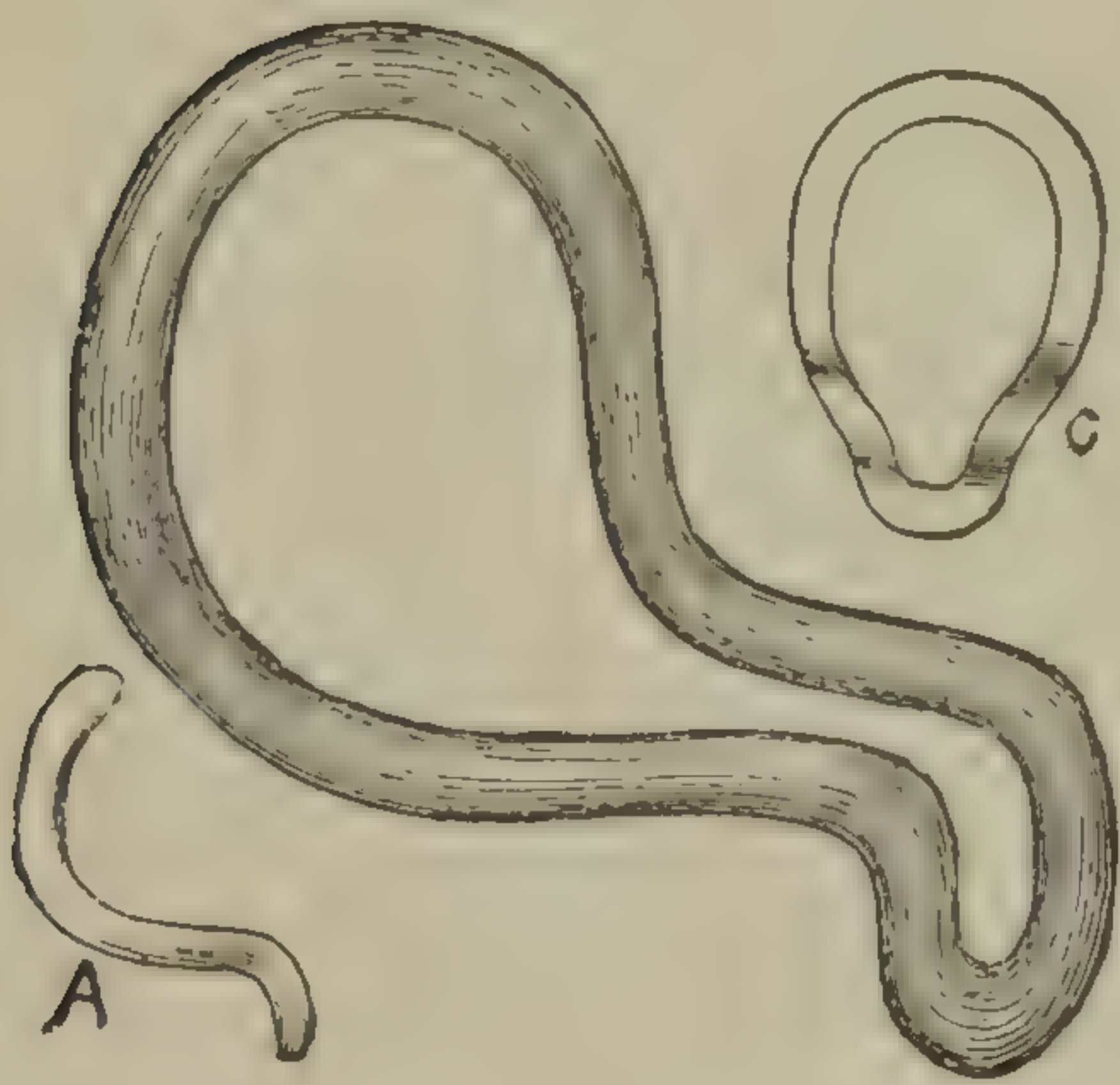
The Hodge pessary is readily moulded into this shape in the following manner: The *anterior part only* is either dipped into boiling wax or lard (the temperature of boiling water is not high enough), or else it is buried in sand heated to about 350° Fahr. It may also be oiled and held over the flame of a spirit-lamp. When sufficiently plastic, the uterine, viz., the unheated, portion of the pessary, with the concavity of its curve looking downward, is grasped by the thumb and fingers, and so compressed that the anterior portion of each lateral bar slightly converges towards its fellow. While still undergoing the pressure, the pessary is quickly carried to a deep wash-basin, one-fourth full of cold water. The tip is now bent almost at a right angle by pressing it for a moment strongly against the dry surface of the basin, over which it is then made quickly and firmly to glide down into the water below. The contact with the water at once "sets" the pessary in the desired shape. The sand bath is certainly the handiest and cleanest way of moulding these pessaries, but, unless carefully watched, it is liable to overheat and spoil some of them. The Smith-pessary is now made by the manufacturers of rubber goods; and is sold by all instrument-makers.

This form of pessary I can confidently recommend as one that will best fit the large majority of cases ordinarily met with, of retroversion, retroflexion, or of prolapse. By comparing a Hodge pessary with Fig. 46, the alterations in shape will be at once seen. A side view is given at A, and a front view at C.

Whenever the body of the womb is too tender to bear the pressure of this hard rubber pessary, the provisional use of inflated rubber-rings will be called for (Fig. 47). These air-

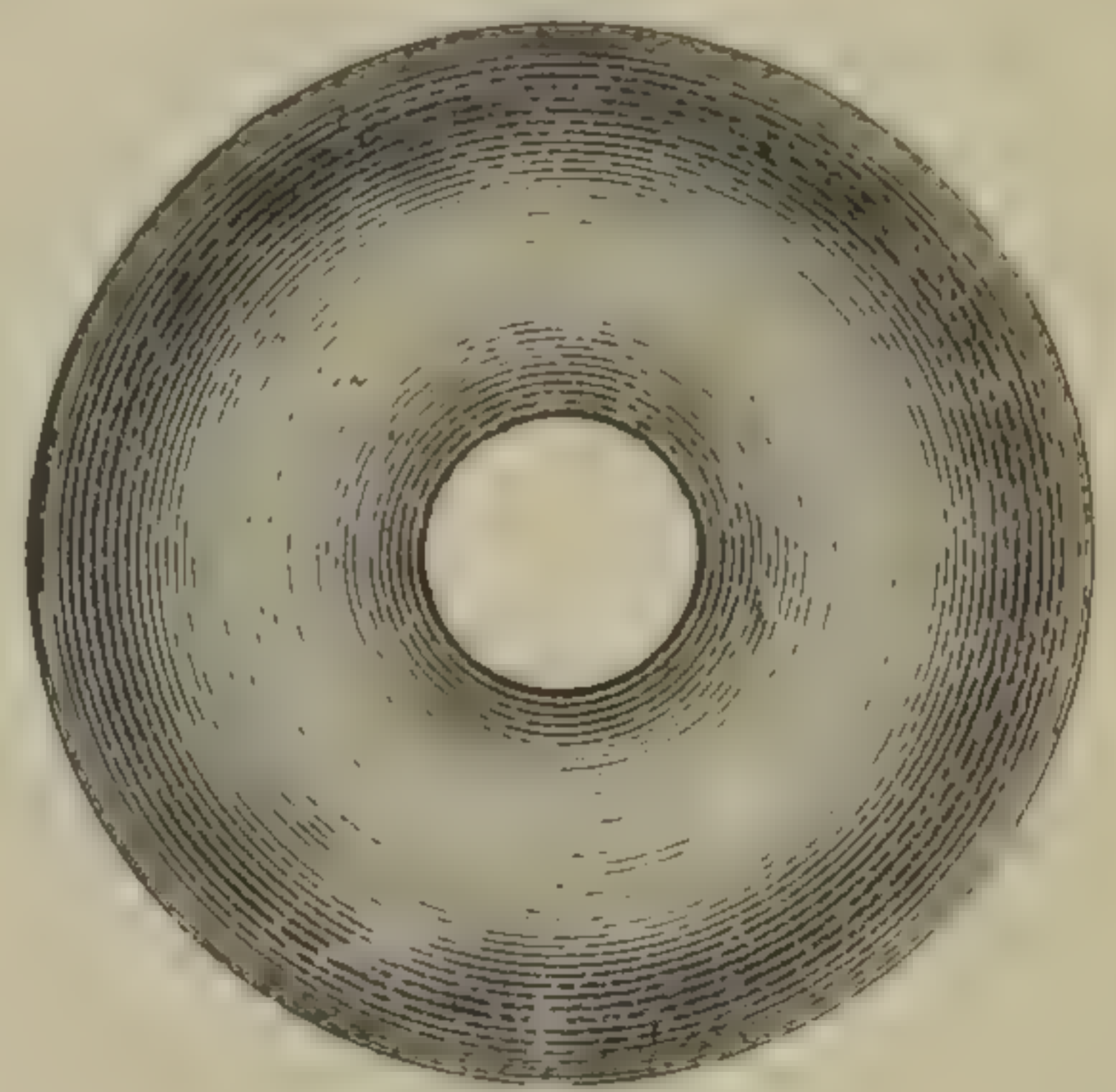
cushions must be used in conjunction with local depletion, with intra-uterine applications of carbolic acid as a local anæsthetic, and with the hot douche, the last provided the woman can herself remove and re-introduce this pessary. The Smith pessary, with a bulbous expansion at the upper end,

FIG. 46.



THE SMITH PESSARY.

FIG. 47.



INFLATED RUBBER-RING.

such as Thomas's, can sometimes be borne when other hard pessaries give pain (Fig. 48). Some stubborn cases I have overcome by an application of fuming nitric acid to the

FIG. 48.



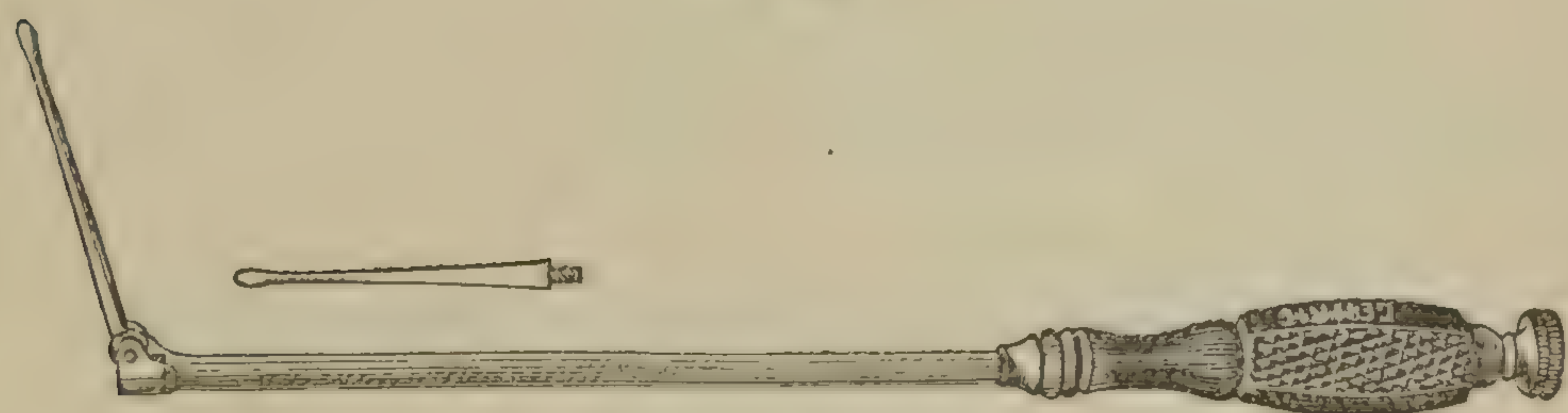
THOMAS'S BULB PESSARY.

uterine cavity. Whenever these inflated rings cannot be procured, wads of oakum or sponges dipped into a weak solution of carbolic acid will make very good substitutes.

The distressing pelvic pains and aches which torment these patients, will be greatly alleviated by passing into the vagina, at bed-time, a suppository containing half a grain of morphia and one grain of the extract of belladonna. A rectal suppository containing one-third of a grain of the extract of belladonna, will sometimes do much good. Whenever, in spite of the foregoing treatment, the tender parts still resent the presence of a pessary, the patient should be put to bed, and kept there until the pressure can be borne. From one to two weeks of rest will usually suffice for this purpose.

In most cases of retroversion it will prove advantageous to stretch out the contracted utero-sacral ligaments by Gardner's repositor (Fig. 49). This instrument is used by introducing the stem into the uterus, and then giving various angles to

FIG. 49.

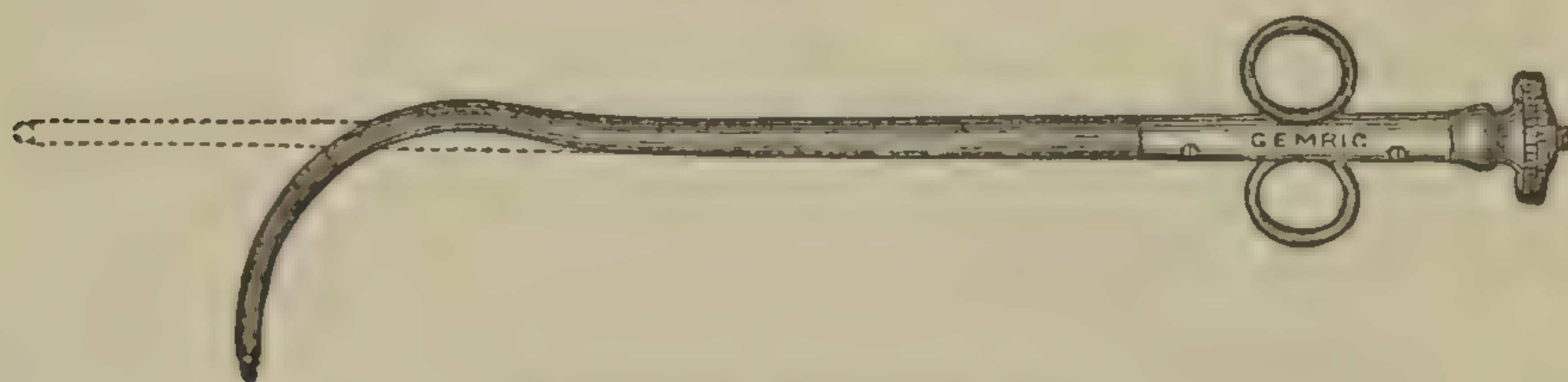


GARDNER'S REPOSITOR.

it by a screw in the handle. In this manner a retroverted womb can be temporarily forced into a state of anteversion. The womb when retroflexed should be straightened out, by giving varying curves to the uterine sound in successive introductions. To avoid injury to the mucous lining from the scraping it gets from the sound, a piece of a flexible bougie, or of a flexible catheter, may be first slipped up to the fundus and the sound introduced into it. The retroflexed womb can also be carried wholly into a temporary condition of anteflexion by the ordinary sound with a slight curve, which can then be made to revolve within the uterine cavity, and thus to reverse the flexion. This can also be more effectually done by Elliot's repositor, the curve of which is changed at pleasure by a screw in the handle (Fig. 50); but, unfortu-

nately, this repositor being made of soft rubber is short-lived. One can accomplish the same thing, by first seizing and drawing down the cervix with the single or the double tenaculum, or with a small volsella forceps, and then pushing up the fundus by a finger passed up either into the vagina or the rectum. By this manœuvre a retroverted

FIG. 50.

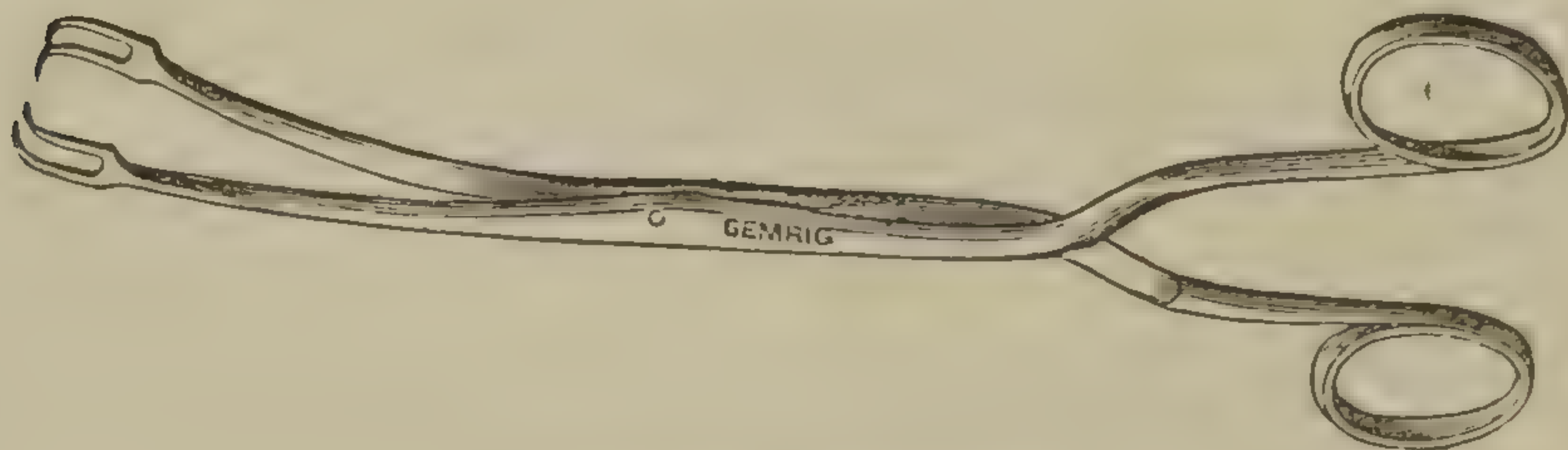


ELLIOT'S REPOSITOR.

womb can also be readily replaced; but it is then best not to push the fundus directly upward over the jutting promontory of the sacrum, but somewhat laterally, so as to make it skirt this bony shelf. As will be seen, under its appropriate heading, the uterine dilator bids fair to do much good in obstinate cases of retroflexion.

One word here on the subject of the volsella (Fig. 51): Since

FIG. 51.



VOLSELLA FORCEPS.

it maintains its hold better than the single tenaculum, and is more out of the way than the double tenaculum, it is to me one of the most precious instruments in my bag, amounting in value almost to a third hand. Apart from using it, as above described, in replacing or in straightening out any kind of version or of flexion of the womb, it subserves other useful purposes. By hooking down the cervix and holding it steady, it materially aids in the introduction of sponge-tents.

For the same reason, upon the removal of the tent, it renders the exploration of the uterine cavity with the finger very much easier than by the usual plan of forcing the womb down upon the finger by supra-pubic pressure, a procedure always painful, and in a fat woman, very difficult of execution. By thus lowering and fixing the womb, it facilitates very materially the removal of intra-uterine polypi, or the scraping away of benign or of malignant growths from the cervix or the fundus. In such cases, I usually apply it without the aid of the speculum, and generally seize hold of the anterior lip. In replacing versions, a mechanical advantage is gained by seizing hold of that lip whose name does not correspond with that of the version. Thus, in retroversions the anterior lip is seized; in anteversions, the posterior lip. But in flexions, as one object of the traction is to stretch out the flexed side the most, that lip should be seized whose name corresponds with that of the flexion. This advice is theoretically correct, but it may not always be found practicable. In acute cases of retroversion or in retroversion of the gravid womb, the volsella acts admirably, after the bladder has been emptied by the catheter, and the woman put in the knee-breast posture. While traction is being made on the cervix, the fundus must be pushed up by two or more fingers passed into the rectum. By these means I have repeatedly replaced the gravid womb without interfering with the process of gestation.

For unmanageable cases of posterior displacement—which I have not yet met with—a new operation has been devised, that of shortening the round ligaments. But, since this operation is in its infancy, and I, thus far, have not had any need of resorting to it, I cannot yet recommend it you. It will, however, be described to you in a future lecture.

LESSON XIII.

ANTEVERSION AND ANTEFLEXION OF THE WOMB.

ANTEVERSION and anteflexion are respectively the reverse of retroversion and retroflexion. The former may be defined as a forward tilting of the womb, without any bend in its axis; anteflexion, as a forward bending of some portion of the womb on its axis. They are exaggerations of the natural position of the womb, and are often associated with a pin-hole os externum, a conical cervix, and, consequently, with sterility. In the former, the fundus approaches the bladder, while the cervix points towards the hollow of the sacrum. This position is readily recognized by the finger. In the latter displacement, if the bend be in the body of the womb, the fundus will, through the upper wall of the vagina, be felt lying on the bladder, while the cervix will be in a natural position; if the bend be in the cervix, the vaginal portion will be sickle-shaped, and the os will look toward the vulva; if the body and the neck are each bent, the axis of the womb will be crescent-shaped, with the horns looking forward. If the walls of the abdomen be thin, or be well relaxed, the whole womb can be outlined by a bimanual examination. The fundus of the retort-shaped womb can then be easily made out by abdominal palpation. All doubtful cases of diagnosis can be cleared up by the use of the sound, which will show whether the anterior body is a fibroid tumor, a displaced ovary, an exudate from cellulitis, or the fundus of the womb.

The symptoms of anteversion are generally not so marked as those of anteflexion. From the pressure of the fundus and of the cervix, vesical and rectal tenesmus may be induced. Sterility may be present, and so may dysmenorrhœa, each

coming from the occlusion of the os by pressure on the hind wall of the vagina. In severe cases of anteflexion, the leading symptoms come from obstructed circulation, and from the stenosis of the cervical canal. There will be dysmenorrhœa, leucorrhœa, and menorrhagia, sterility, pain in coition and in locomotion, irritable bladder, backache, and many pelvic pains. Not one of these symptoms is, however, pathognomonic of these displacements, and nothing can be depended upon but a careful examination by the finger and the sound.

Since anteversion and anteflexion are more or less the natural conditions of the nulliparous or of the healthy uterus, and especially so when the bladder is empty, it by no means follows, that every case of hysteria or of pelvic irritation exhibiting these forms of displacement requires a uterine treatment. I am led to make this remark, because general nerve-exhaustion with irritable spine, or a congestive irritation, or, perhaps, an inflammation of one ovary, or of both, is often at the bottom of symptoms usually referred to the above displacements; and because many an hysterical woman has, consequently, been subjected unfortunately to a purely uterine treatment, when it should have been a moral one, or a constitutional one, or, at the most, an ovarian one. The paramount influence of the unseen ovaries over body and mind is too much overlooked. With much truth it has been said, that anatomically we may speak of the "womb and its appendages," but that physiologically the womb is really an appendage of the ovaries.* True, the contiguity of these structures, and their intimate nervous, vascular and functional kinship, make them so mutually dependent, that a disease in the one is very likely to beget some derangement in the other. But without committing myself to the doctrine that hysteria in woman is, primarily or secondarily, always an ovarian expression, I am sure that it is often present when

* This is well illustrated by Kœberle's case, in which after the womb above its cervix had been removed the woman became pregnant, and perished from a necessarily extra-uterine foetation.

no lesions whatever can be discovered in the uterus proper. Hysteria is pre-eminently a disease of the unmarried, of the newly-married, and of the sterile. But, since in them the womb is naturally anteflexed and anteverted, so this physiological condition is liable to be mistaken for a pathological one, and to be treated accordingly—that is to say, maltreated. The diagnosis is, therefore, not always clear; but, when dysmenorrhœa is present and has existed from puberty, when the womb is markedly tender or is congested, or it exhibits other unmistakable objective evidences of disease; when, in addition, the marriage is an unfruitful one, then may the hysterical and other subjective symptoms be intelligently referred to the uterus proper as the primal cause. Yet my experience would lead me to say that very few cases of forward displacement of the womb need any local treatment whatever, because the uterine symptoms are usually mere mimicries, set up by the irritable spine of nerve-exhaustion.

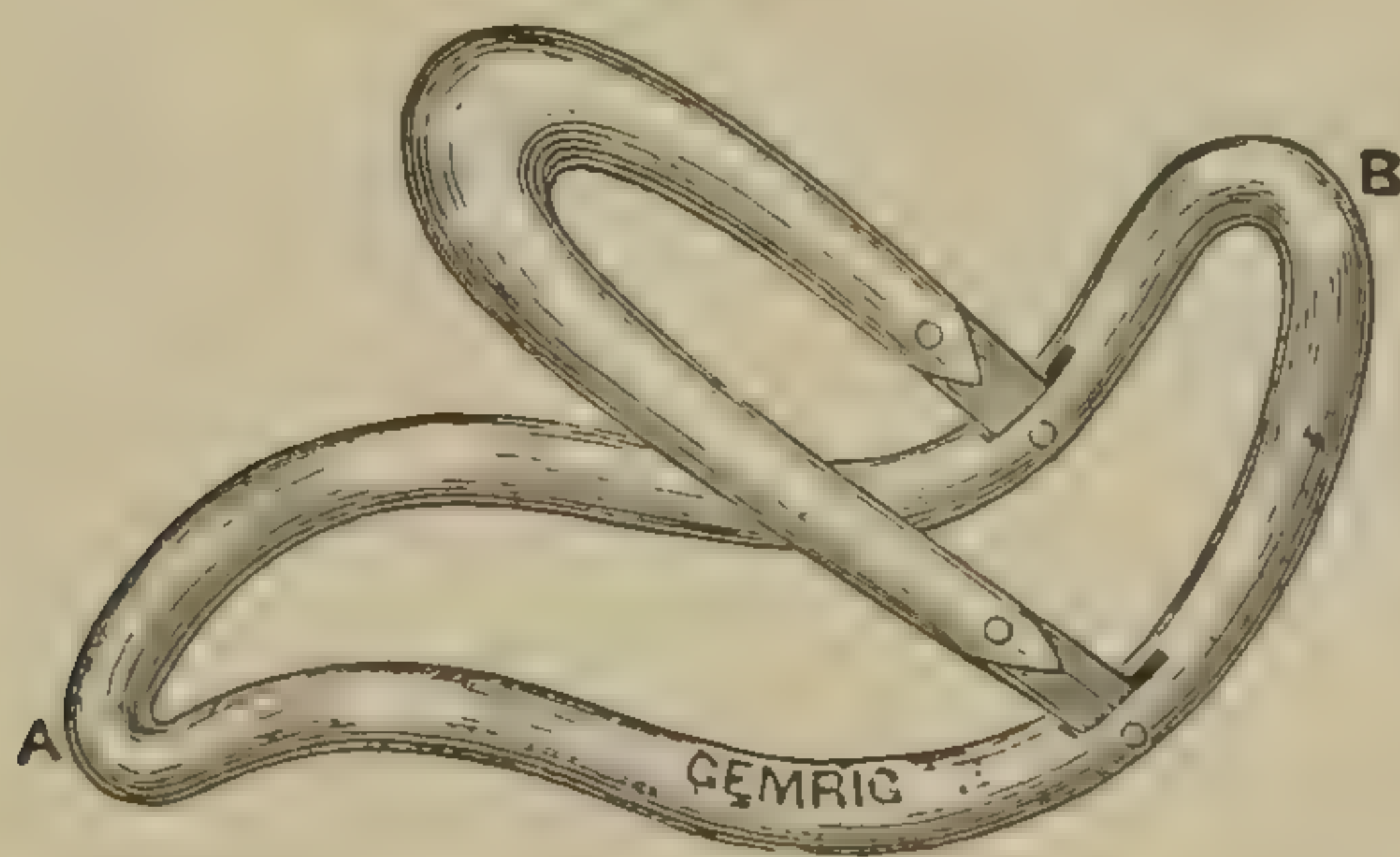
Since typical examples of pure anteflexion alone, or of pure anteversion alone, are rarely to be met with, the one lesion usually blending with the other, the same kind of treatment for each will often answer. By the same means as were described for cases of retroversion and of retroflexion, the uterovesical folds of the peritoneum must be gently stretched out, but of course in an opposite direction, and the womb, when bent, straightened out. This should rarely be done oftener than twice a week; in the meantime anodyne vaginal suppositories at bed-time will usually be very grateful. At each visit topical remedies will also be generally called for. Since, as has been remarked, these forms of displacement more commonly occur in unmarried or in sterile women, the cervical canal is often tortuous and contracted. Tents of sponge, or of laminaria, or of slippery-elm bark, have, therefore, been used as auxiliaries to the treatment. This method of cure, however, being tedious and unsatisfactory, I have lately, with great success, been treating these cases by forcible dilatation—an operation which will shortly be described.

The treatment of this class of displacements by pessaries, is

by no means so satisfactory as in the former class. No two cases can in this respect be treated exactly alike. The difficulty lies in the construction of an instrument that shall lift up the body of the womb by pressure made in front of the cervix, without irritating the bladder, through which the support must be communicated. By pushing the cervix forward, the Hodge pessary will sometimes, in pure cases of anteversion, tilt the fundus backward off from the bladder. Sometimes in anteflexions, by sharing with the bladder the weight of a congested womb, it will alleviate the vesical distress. Again, this instrument, in conjunction with an abdominal brace, will at times give much comfort. Occasionally, if introduced wrong end foremost, the small curve behind the cervix and the large one in front, the womb will be raised up and much relief obtained.

In a few selected cases, Thomas's anteversion pessary will act well; but in the majority it cannot be borne. It has, however, served me some very good turns, and I therefore give a cut of it (Fig. 52). It is practically a Smith pessary armed posteriorly with a movable bow, which is added

FIG. 52.



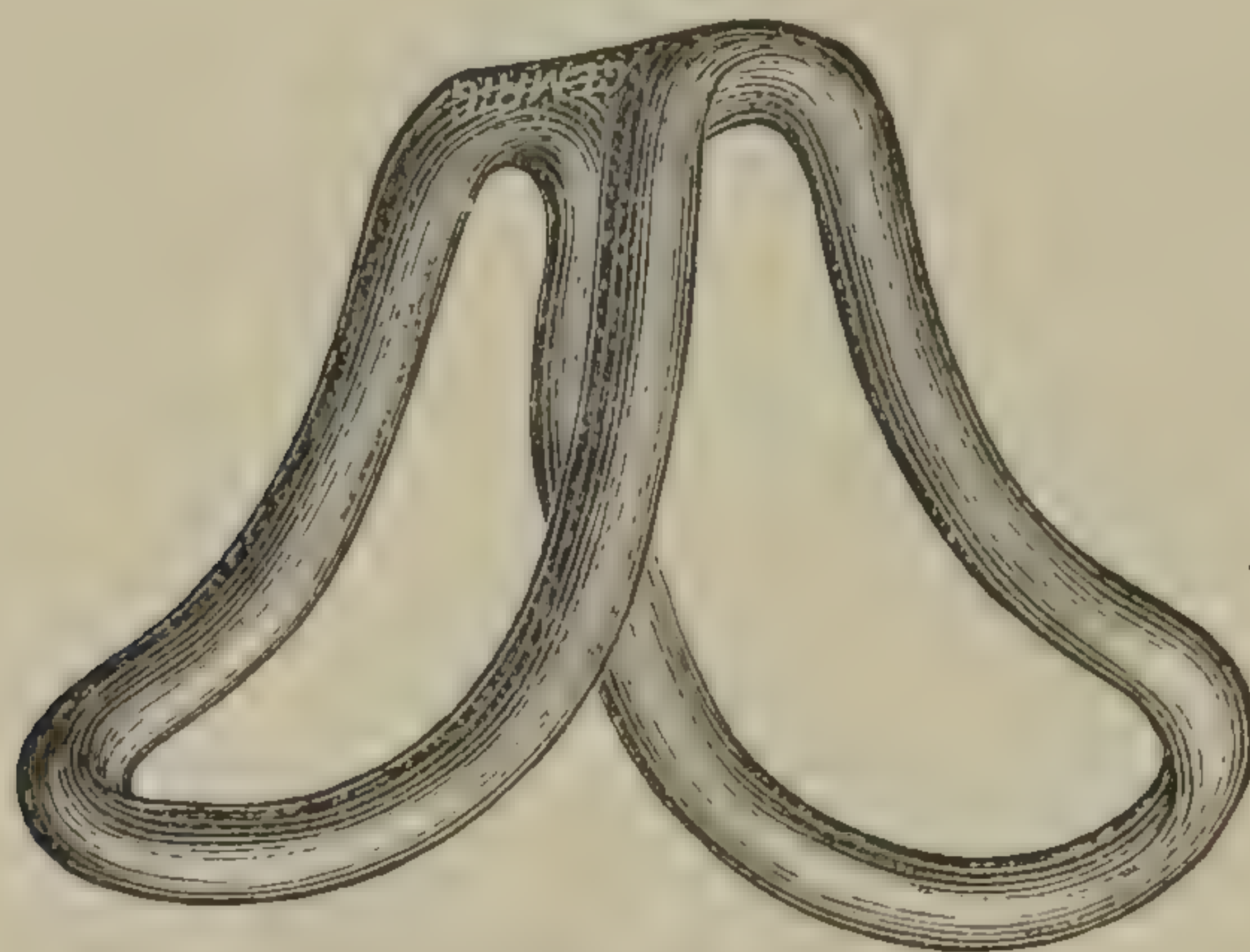
THOMAS'S ANTEVERSION PESSARY.

to make pressure upon the fundus uteri. In its introduction and removal some degree of knack is needed. After being closed, it is introduced and lodged behind the cervix, just like a Hodge pessary. Then, by insinuating the index finger between the bow and the pessary proper, the former is prized up and swung forward. Since, in the removal, the bow flaps back on the posterior bar (B) and tightly pinches the cervix,

the latter must be pushed upward out of this grip by means of the index finger. This sleight of hand should be taught to the patient, so that she herself may be able to remove the pessary, or to explain the method of its removal to a physician ignorant of its peculiar construction. Otherwise, he will tug away in vain at its anterior bar (A), and be at his wits' end to know how to get it out of the vagina.

The ordinary globe- and ring-pessaries will occasionally answer when other measures fail. Graily Hewitt's modification of the Hodge pessary has, in my hands, occasionally given great comfort after the failure of every other kind of pessary (Fig. 53). It is, however, like its fellows, adapted only to single and isolated cases, such as cannot be deter-

FIG. 53.



HEWITT'S ANTEVERSION PESSARY.

mined beforehand. Of all extra-uterine pessaries, excepting the Hodge, I have, in the long run, found the inflated ring-pessary to be the best. This soft-rubber air-cushion can generally be well borne, while, by the admission of the cervix into the opening in its centre, the fundus is tilted off from the bladder. This pessary has, however, three grave faults. it over-distends the vagina; it soon becomes useless by collapsing; it is very liable to generate offensive discharges. Yet, in spite of these objections, I am sometimes driven to its provisional use, while resorting to such measures as are calculated to relieve the congestion—for after all this is the marrow of a successful treatment.

I have been much pleased with the simple but very ingenious pessary devised by Dr. E. C. Gehrung, of St. Louis. It is a Hodge pessary doubled over, and it meets the indications very well. Fig. 54 represents this pessary, and Fig. 55 shows its action. As the width of this pessary makes it need a special mode of introduction—one very analogous to that of the old-fashioned unclosed lever pessary—I shall quote Dr. Gehrung's description of it: "Place the pessary on a table, the superior (convex) arch S below, the inferior (concave) I above, the curves R and L pointing toward you. Then take hold of curve L, now presenting to your right, with the right hand, and insert curve R into the vagina to the right of the

FIG. 54.

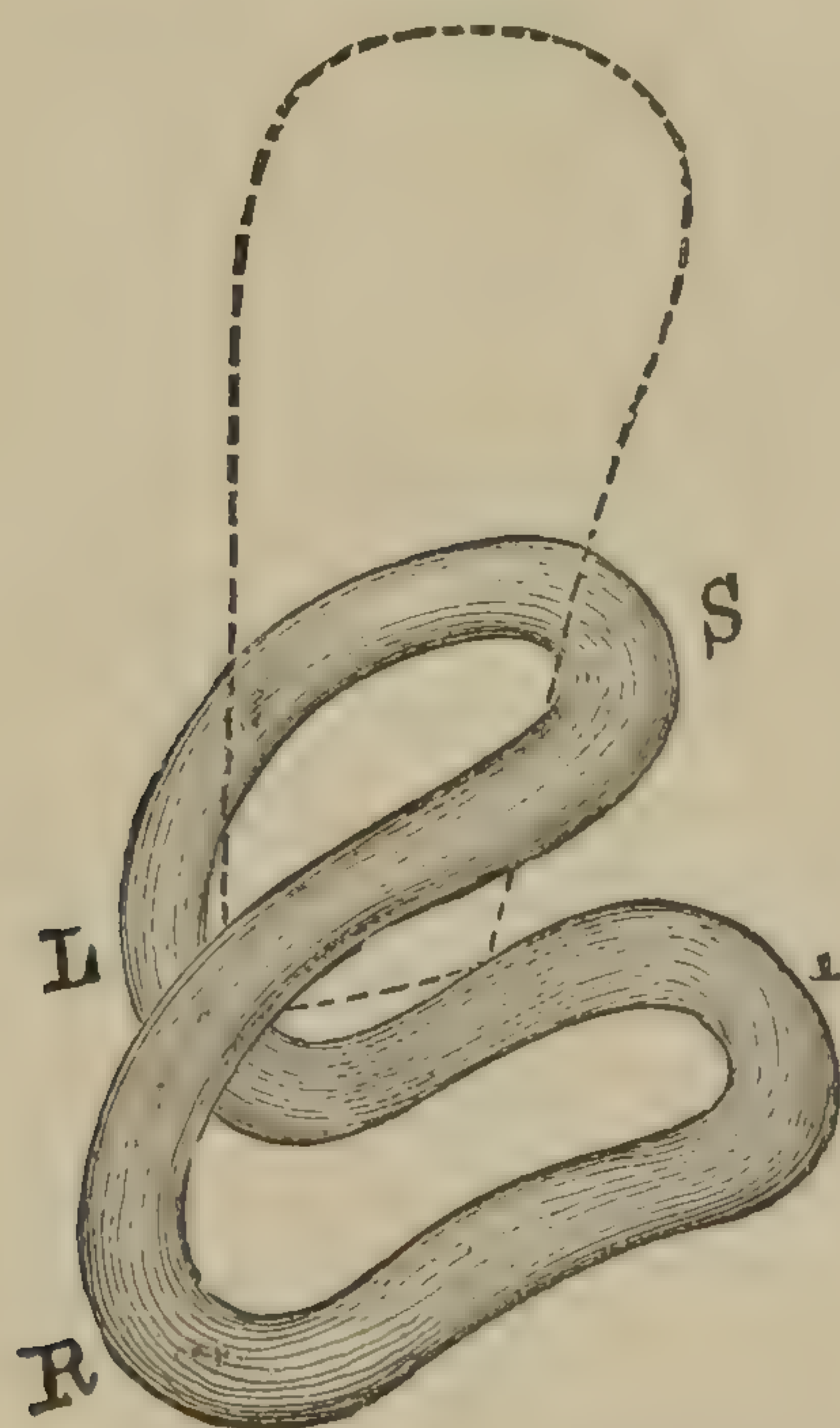


FIG. 55.



GEHRUNG'S ANTEVERSION PESSARY.

patient, until three-fourths of the instrument are buried within. Now make it turn on point R, as on a pivot, by pushing curve L toward the fourchette and the left side of the patient, so that at the same time that curve L slips into the vagina, the arch S will turn upward under the body of the womb, and the arch I downward to the os pubis. This

being accomplished, the womb will turn to the normal axis; if it should fail to do so, use the pessary as a repositor by pressing the arch I upward."

In no other class of flexions will the intra-uterine stem-pessary do more good than in this, and when other means fail it should be resorted to. Since, however, the subject is an important one, and since, also, a stem-pessary can benefit other kinds of flexion as well, its consideration will be reserved for a special lesson. Under the heading of *Rapid Dilatation of the Cervical Canal*, I purpose also to give an additional method of treating this stubborn class of flexions, which will, in the great majority of cases, yield the very best results.

LESSON XIV.

ON THE USE OF THE CLOSED LEVER-PESSARY, AND OF THE INTRA-UTERINE STEM-PESSARY.

THE CLOSED LEVER-PESSARY.

TAKE it all in all, the very best pessary yet devised is Hodge's closed lever-pessary, or such a modification of it as Smith's (Fig. 46). I find however that the large majority of practitioners resort either to the occasional use of the cup-and-stem pessary, which must necessarily increase any kind of flexion of the womb, or to the routine use of that most illogical instrument, the ring-pessary. The reason of this is, that none of the text-books of the day describe the mechanism of the action of the lever-pessary, or the mode of its introduction. I shall, therefore, enlarge upon the subject of this pessary in words supplemental to those of previous lessons.

When properly adjusted, one end of this pessary rests upon the anterior wall of the vagina, the other impinges upon the upper part of the posterior wall, behind the cervix. So placed, it is in constant motion, responding to every movement of the diaphragm, and, indeed, to every movement of the body, just as the womb responds when in a state of health.

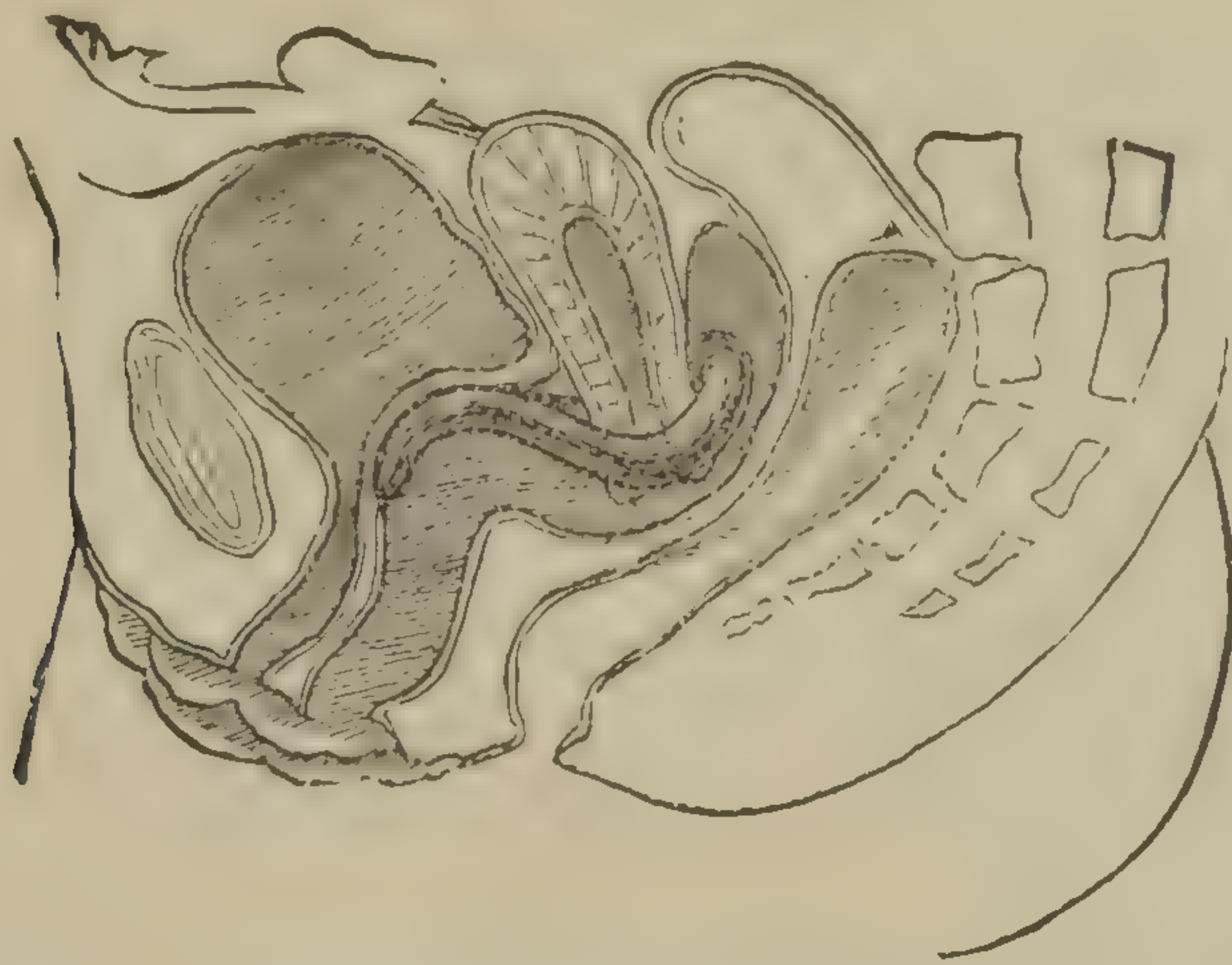
As its name indicates, this pessary acts on the principle of a lever, but the mechanism of its action is two-fold. By stretching the vagina upward and backward, it draws the cervix in the same direction. The womb then turns on its central point of ligamentous attachment, as on a fixed pivot, and the fundus is consequently tilted forward. The womb itself thus becomes a lever, of which its point of attachment to the bladder is the fulcrum. The power is applied to the cervix, and the fundus becomes the weight, or resistance. This action remedies retroversions, but not retroflexions un-

less complicated with retroversion—as they usually are. Then again the pessary itself acts as a lever. The anterior vaginal wall, with the visceral pressure above it, now becomes the power applied to the lower limb, or “long arm,” of the lever; the posterior vaginal wall is the fulcrum, or support, and the upper limb, or “short arm,” lying behind the cervix, directly pushes up the weight, or fundus uteri. This action tends to remedy both retroflexion and retroversion.

For instance: during the act of inspiration, the descending diaphragm crowds down the abdominal viscera upon the bladder, to which are attached the cervix uteri and the anterior wall of the vagina. These organs, therefore, descend. As a result, the lower, or fore end of the lever is necessarily pushed down by the descending anterior wall of the vagina on which it rests; while its upper, or hind end, proportionally rises up and tilts forward the retroverted or the retroflexed fundus. In expiration the reverse takes place. The pressure is, therefore, not a steady one, but a gentle rocking one, which is the most efficient of all. It is also the one least liable to inflict injury upon the soft parts, because the points of pressure are varying ones. But to attain these ends, the pessary must be mobile, and rarely so large as to put the vagina on the stretch; otherwise, it loses its distinctive character of a lever, and degenerates into an ordinary ring-pessary. It should, further, impinge on the soft parts only, and take no bearing on the solid structures of the pelvis. Here I wish to modify a too-sweeping statement made in my last lesson, that its “anterior bar plants itself firmly against the posterior surface of the pubic symphysis, or against the angle formed by the converging rami of the pubic bones.” True, this is liable to happen when the Hodge pessary is too large, or the curve faulty, or the womb too heavy; and on this account, as well as for others there indicated, I much prefer Smith’s modification. But such a firm basis of support was not intended by the inventor, and his pessary, as well as the Smith’s pessary, always acts best when the lower bar presses upon the soft and yielding anterior wall of the vagina (Fig. 56) instead of upon the pubic bones.

Both the Hodge and the Smith pessary have two curves, a small one and a large one, making the instrument resemble somewhat the letter S. But in the latter the small curve is sharper than that of the Hodge pessary; and, on this account, the large curve is the one which must always be introduced first, and its end placed behind the cervix of the womb. This rule generally holds good also with the Hodge pessary, but there are certain exceptions. Thus, if in retroversions or in retroflexions the fundus of the womb is too sensitive to stand the

FIG. 56.

THE SMITH-HODGE PESSARY IN POSITION. (*Cleveland.*)

greater pressure of the large curve; if the vagina is short and rigid, or the womb not very movable; the Hodge pessary may be reversed, and the small curve placed temporarily behind the cervix, until these difficulties are overcome. This plan may also be tried whenever the cervix does not project into the vagina, but is flush with the posterior vaginal wall; and whenever an antelexion, an anteversion, or a prolapse of the womb, is not relieved by the introduction of the large curve first.

For the guidance of those of you who have never used the lever pessary, I subjoin the following general rules:

1. The uterine, or upper end, must always lodge *behind* the cervix uteri.

2. *Always* in the Smith pessary, and *usually* in the Hodge pessary, the uterine end is the one which has the large curve.

3. The concavity of the large curve must always look toward the anterior wall of the vagina, and the convexity rest upon its posterior wall.

4. When *in situ*, the pessary should fit so loosely as to be freely movable, and to admit the finger very easily between its anterior bar and the pubic symphysis.

5. In retroflexions the pessary must be long enough to span the angle of flexure in the womb, and to press on the uterine body above the angle; otherwise, the bent womb straddles the pessary and the flexion becomes worse.

6. After the introduction of a pessary, *the womb must always be put into its proper position*, either by the sound, or by double palpation—viz., by a finger of the left hand in the vagina pushing the cervix backward, and by the fingers of the right hand hooking the fundus upward and forward, through the wall of the abdomen. From not observing this rule many physicians do more harm than good with pessaries.

7. If the womb does not stay in its proper position, but falls back, the pessary is either not long enough, or not curved enough, and it must be changed until a suitable one has been found.

The introduction of the lever pessary can be readily effected, by a practiced hand, in any posture the woman may assume. But the following method is perhaps the best: The woman lies on her back across the bed, as near to the edge as possible, and with her knees drawn up. The physician passes the fore- and the middle finger of his left hand just inside the vulva, slightly separates them, and at the same time gently presses the perineum downward. The tips of the fingers of the right hand so hold the pessary that the concavity of its large curve looks towards the woman's left thigh; in other words, with the free end of the pessary in a line with the vulvar opening. This end of the pessary is then to be slipped in between the fingers of the left hand, which are now removed, and the whole instrument made to enter the vagina by a firm downward pressure on the perineum. While it is entering and not yet wholly within, the guiding fingers of the right

hand turn it half round on its long axis, so as to make the concavity of its large curve look directly upward toward the anterior wall of the vagina. The pessary will now be found quite immovable, and with its upper bar pressing firmly on the front of the cervix. This position gives more or less pain to the woman, and the physician, therefore, hastens to introduce the index finger of his left hand through the loop, or opening, of the pessary, and hook down, or press down, the upper bar until it slips over the cervix into the *cul-de-sac* behind. In order to facilitate this last manœuvre, I often lift the lower bar of the pessary upward with the fingers of the right hand, and depress the upper bar by downward pressure, with the index finger of the left hand. But this is more easily understood by a practical demonstration on the living subject, than by any verbal or any written description. Finally, to verify the accuracy of the adjustment, the finger should not be withdrawn from the vagina, until it has felt the cervix projecting through the loop of the pessary, and looking towards the sacrum, while the fundus looks forward and rests upon the bladder.

No properly fitting lever pinches; but, like any other pessary, it ought to be occasionally removed, and the vagina examined for abrasions. The most common site of an abrasion is at the junction of the cervix with the posterior wall of the vagina; then usually there is an acrid and offensive discharge. For purposes of cleanliness, the patient should be instructed to use a daily vaginal injection of tepid water. She should be told also to report to her physician whenever a sense of uneasiness is felt, or any unusual discharge takes place.

To remove the pessary the fore-finger is hooked loosely over the lower bar, and traction gently made, at first backward, and afterward in the direction which the lever will of itself take. It then usually rotates spontaneously on its long axis, and comes out edgewise in the curve of the outlet.

THE INTRA-UTERINE STEM-PESSARY.

An intra-uterine stem-pessary is a splint which must perforce straighten out the flexion, whether a backward or a forward one. But the endometrium often resents the intrusion of such a foreign body, and some hazard attends its use. Some years ago I wrote a series of articles for the *Medical and Surgical Reporter*, of Philadelphia, in which I termed this instrument a good one, a very good one—to watch. I had then just passed through an unpleasant experience with it in two cases—an experience which was not at all reassuring. In one case, after the introduction of Wright's bifurcating metallic stem, my patient suffered much pain for several hours, before I could be fetched to remove it. A smart, but luckily manageable attack of perimetritis followed. In the other case, the lady passed through unspeakable agony before I could reach her bedside. Fortunately nothing more than an ephemeral pelvic soreness ensued. With this unhappy experience fresh on my mind, I was led to condemn, in these articles, the use of the intra-uterine stem. But, since then, a riper experience has taught me a good deal about this pessary, and has wholly changed my views with regard to its use. I now hold that there are certain stubborn cases of ante flexion, and, for the matter of that, of retroflexion too, which can be satisfactorily treated in no other way than by this stem. Not a month now passes without finding one or more of my patients under its use. So changed, indeed, are my views on this point that, in a discussion on this instrument at one of the meetings of the American Gynecological Society, held in Boston, I stated that I had left two unmarried ladies in Philadelphia each wearing this kind of pessary. I now, however, take certain precautions which I did not take before—precautions which close observation has taught me are needful, and which give me far greater confidence.

In the first place, I have pretty much discarded all metallic stems, except the galvanic ones for special purposes apart from flexion, and I use either a smooth glass, or a smooth hard rubber stem (Fig. 57), or the split rubber one (Fig. 58),

such as Chambers has devised, taking good care that the spring of its limbs is feeble. Secondly, I never introduce one in my office, but always at the home of the patient. Thirdly, the stem must measure one-quarter of an inch less than the uterine cavity. If this rule be not observed, a misstep, the succussions of coition, or, as I have seen it in one instance, the act of lacing a boot, may bring the fundus into violent

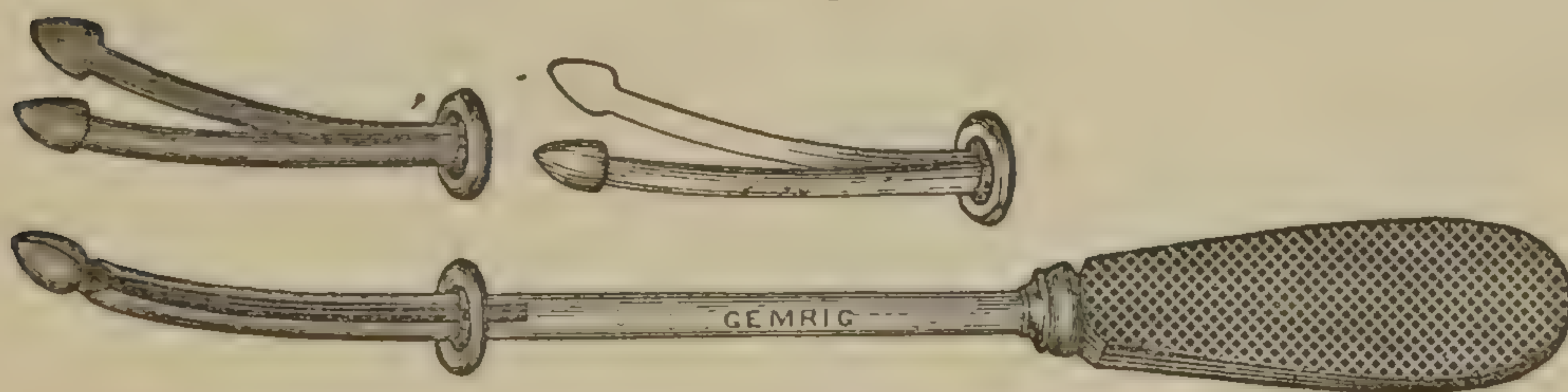
FIG. 57.



HARD RUBBER STEM-PESSARY.

contact with the point or the points of the stem, and cause much pain, and perhaps mischief. On the other hand, if the stem be too short, the fundus may be violently bent over its tip. Fourthly, at my first visit I invariably pass a loop of stout thread through the button of the stem, by which the woman herself can withdraw the pessary; and she gets orders to do so, whenever the pain produced by the introduction, instead of lulling, goes on from bad to worse. As soon as the

FIG. 58.



CHAMBER'S STEM-PESSARY.

womb has become tolerant of the foreign body, the loop is cut and the thread removed, for by this time it will have become somewhat fetid. Since observing these rules of guidance, I have not had any bad results from the use of this instrument. Yet I frankly confess to feeling more or less anxious until the first week is passed, and I always feel relieved whenever the stem has been removed for good.

There is one objection to its use in married women, and that is the sterility which it usually enforces. I have, however, met with one marked exception to the rule: A lady, afflicted with very severe dysmenorrhœa from an acute ante-flexion, had been married three years without conceiving. At the request of her physician, I forcibly dilated the cervical canal, under ether. This did her good, but it did not cure her sterility, nor free her wholly from dysmenorrhœa; and I now recommended Chambers's stem. It was introduced with the understanding that moderate sexual intercourse might be indulged in, provided no soreness were thereby induced. Very shortly afterwards, while still wearing the stem, she missed a monthly period, and evidently became pregnant. The very interesting question now came up: what was to be done with the pessary? We were afraid to leave it in longer, lest it might interfere with the development of the ovum. On the other hand, we feared to take it out, lest the diverging arms of the stem might scrape away the yet small ovum, or that the suddenly returning flexion might dislodge it. We finally decided on the latter course, and removed the pessary without interfering with the gestation, which steadily went on for a few weeks longer, and then unfortunately ended in a miscarriage. This case was deemed by me unique, until I found that Routh had "known of two cases where conception did occur while the stem was in utero, and pregnancy went on to the full period." He adds, however, the remarkable statement, that they are habitually worn in England by ladies of rank and fashion to prevent conception.*

In restricting the use of the intra-uterine stem to cases of forward uterine flexion alone, some authors seem to me too exclusive. I habitually use them in those cases—fortunately not the rule—of retroflexion, in which the body of the womb, by the congestion of impeded venous circulation, is too tender to bear the pressure of even the air-cushion. The introduction of the stem—and the split stem is here the only one which will stay in—by straightening out the bend, furthers

* *Medical Press and Circular*, October 16, 1878, p. 306.

the return-current of blood, relieves the congestion, and prepares the womb for the ordinary vaginal pessary. Conjoined with the stem in these cases, the Smith pessary will often be needed to lift up the fundus of the now retroverted womb.

Since the introduction of a stem-pessary is sometimes no easy matter, a word or two on this point may not come amiss. I find that this difficulty can very generally be overcome by the preliminary use of the uterine dilator. When, however, the cervix is very crooked, or the uterine angle is an acute one, the dilatation will fail in its object, and I then resort to the following manœuvre: First, bend the tip of the uterine sound into a short curve, but yet sufficiently sharp to pass the os internum, while the fore-lip of the cervix is held fixed by a tenaculum. Now, when the tip of the sound touches the fundus, its curved portion will have cleared the os internum and lie above it, and the cervical canal will therefore be occupied by the straight portion of the sound, and will, of course, be proportionately straightened out. A straight surgeon's probe can now be made to enter the uterine cavity, and, as it passes the os internum, the sound is withdrawn. Along this probe, as a guide, one can now readily slide in the stem.

Stem-pessaries usually irritate the endometrium more or less, and they, therefore, cannot as a rule be kept in for any great length of time. This irritation is of value in reducing the size of a sub-involuted or of an otherwise enlarged womb. But it also tends to produce leucorrhœa or menorrhagia, and may on that account compel the discontinuance of this mode of treatment. By the irritation which they are liable to excite, stems, and especially the galvanic ones which are made of copper and tipped with zinc, will often be found useful in amenorrhœa.

LESSON XV.

DIFFERENT KINDS OF PESSARIES. ABDOMINAL SUPPORTERS.

DIFFERENT KINDS OF PESSARIES.

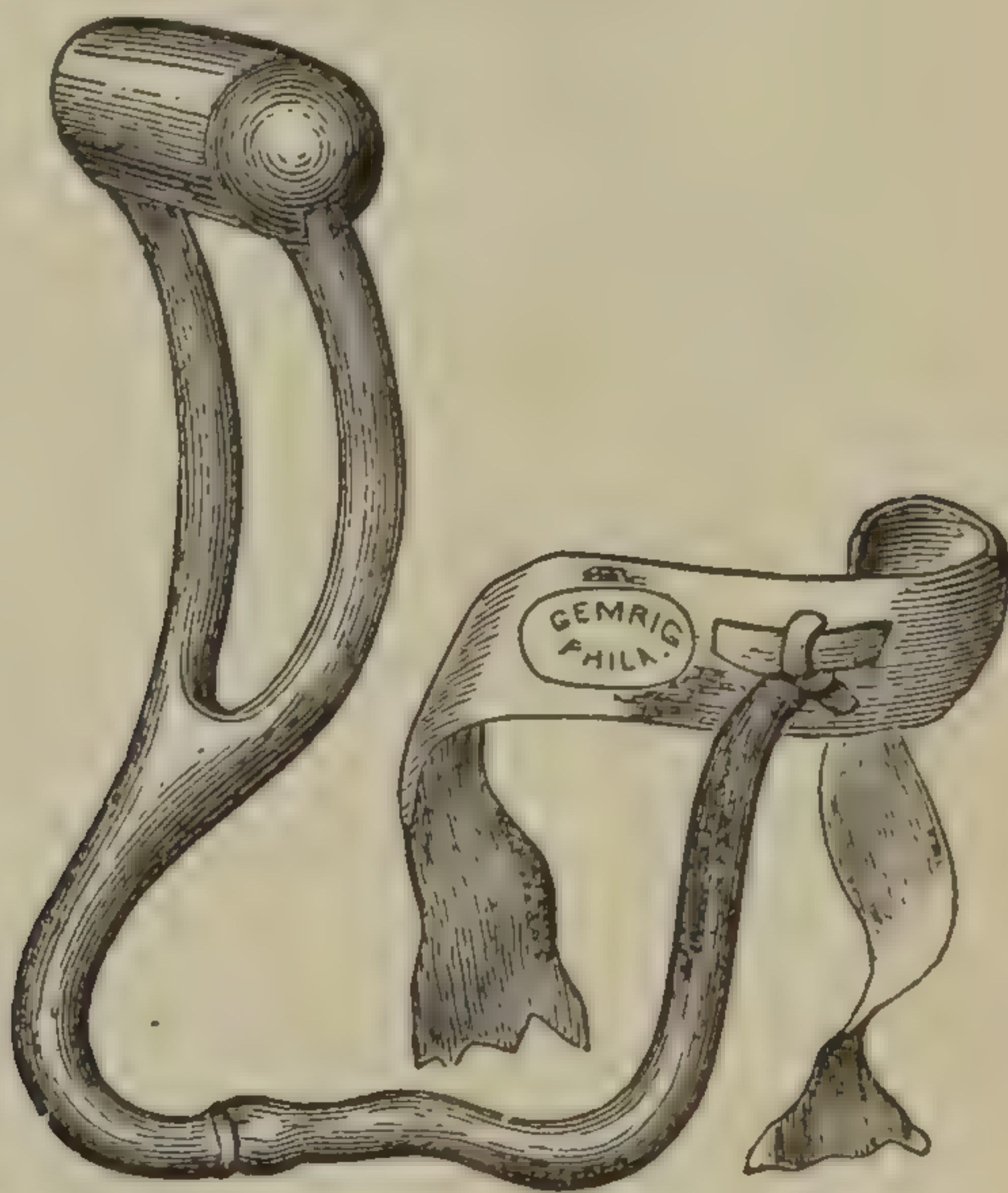
THERE are a number of other pessaries to which some reference should be made, as they occasionally come into play. Of those with an external, or extra-vaginal, base of support, the best are Cutter's Retroversion Pessary (Fig. 59), and the Thomas-Cutter Pessary (Fig. 60).

FIG. 59.



CUTTER'S RETROVERSION PESSARY.

FIG. 60.

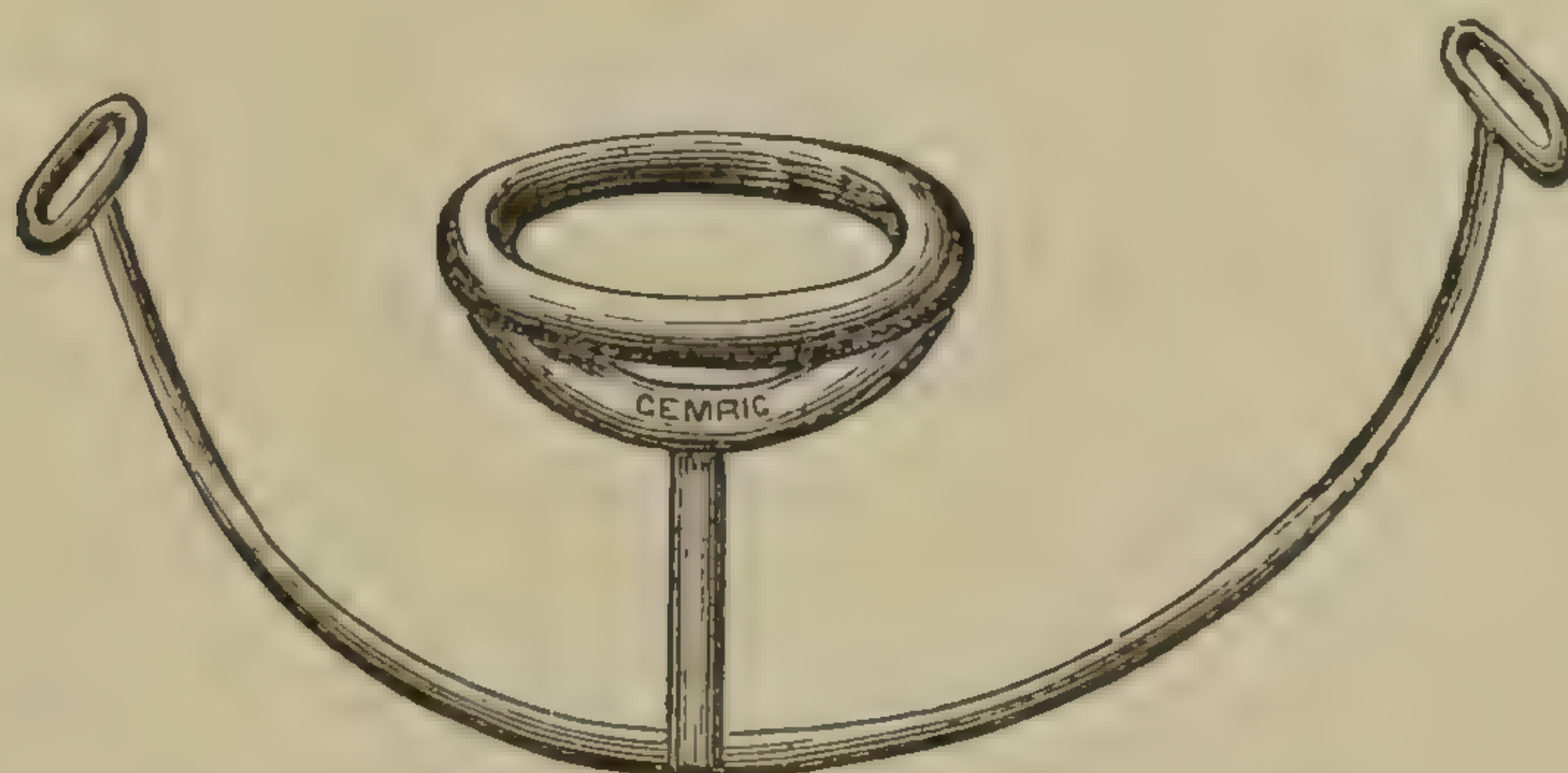


THE THOMAS-CUTTER PESSARY.

They are kept in position by a perineum strap, which is buckled to a waist-band, and they act by restoring the posterior vaginal wall to its natural length, and by lifting up the dislocated fundus. By the shortening or by the lengthening of the perineum strap which sustains them, the pressure on a tender womb or on a prolapsed ovary can be graduated.

They have also the further merit of being removable and replaceable by the woman herself. As a set-off, their presence is a constant course of annoyance, and they are liable to chafe the perineum. They should, therefore, as a rule, not be resorted to until intra-vaginal pessaries have failed.

FIG. 61.



GODDARD'S RING-AND-STEM PESSARY.

FIG. 62.



CUTTER'S RING-AND-STEM PESSARY.

FIG. 63.



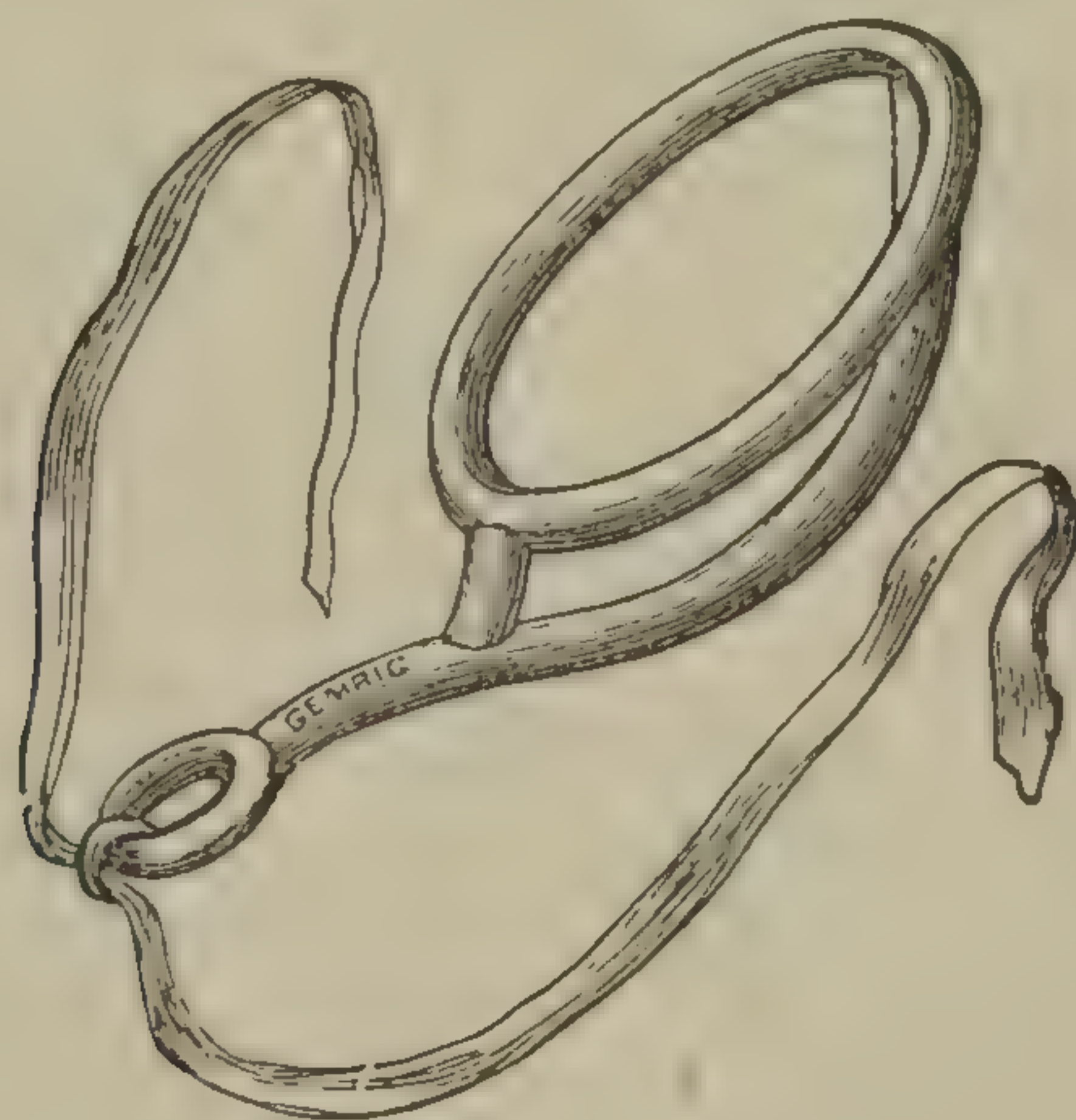
JAMES'S CUP-AND-STEM PESSARY.

Next in rank come the Ring-and-Stem pessaries and the Cup-and-Stem pessaries. The instruments are so stiff, so unwieldy, and so expensive, that it is a comfort to know that they are rarely needed. They are useful in those conditions in which there exists a complete prolapse of the womb and vagina, together with an absence of the vaginal portion of the cervix—cases in which, the vagina being flush with the

os externum, the ring pessary or the closed-lever pessary cannot be kept behind the cervix. They also come into play when the perineum has been torn, or the vagina is so relaxed that no other kind of pessary can be retained. Again, in the early stages of prolapse from hypertrophic elongation of the supra-vaginal cervix, they will keep the womb up better than any other instrument. On the other hand, in retroflexion and in ante flexion they do much harm, for by pushing up the cervix of the retort-shaped womb without supporting the bent fundus, they increase the flexion. Yet, for these very dislocations, they are very constantly being used, or rather misabused.

The best Ring- and Stem-pessaries are Goddard's (Fig. 61), and Cutter's (Fig. 62). Of the Cup- and Stem-pessaries James's (Fig. 63) is perhaps the best. I must, however, own to knowing very little about these instruments, for it is an exceedingly rare thing for me to be driven to their use.

FIG. 64.



SPOONER'S PESSARY.

Dr. Spooner, of this city, has devised a hybrid pessary—a Meigs's ring with a handle to it—of which I can speak more intelligently. When the woman can bear the pressure of it, it can be relied on to keep up the prolapsing womb and vagina (Fig. 64); but it needs constant watching, as the arched portion is very liable to chafe the posterior wall of the vagina.

When everything else fails, a large wad of oakum makes

an excellent substitute for a pessary. With it I have a limited experience, but enough to add my recommendation to that of some excellent British physicians. It keeps much sweeter than cotton, is far more elastic, and shores up the womb better.

On account of their short life and very bad smell, all soft-rubber pessaries should be deemed merely make-shifts. They are to be looked upon simply as temporary expedients, to pave the way for such hard-rubber ones as cannot at first be borne. For this use they serve a good purpose.

Since pessaries of soft metal can be bent into any shape, they are invaluable for irregular or for lateral displacements of the womb. When one of these pliable pessaries has been made, after successive trials, to fit, so to speak, the uterine corns and bunions, it can be used as a model for one made of silver or of hard rubber.

Every kind of pessary needs watching, for it is liable to produce not only abrasions, but deep ulcerations of the vagina. The site of these lesions is usually behind the cervix; but it also is found on the anterior wall of the vagina, just behind the symphysis pubis. Every pessary should, therefore, be taken out occasionally, so that the soft parts on which it rests can be examined. An elastic ring is more liable to do harm than any other kind. Within the last four years I have twice been called upon to remove a Meigs's ring, which had become imbedded in the soft parts. One ring, after being left in for two years, had sunk into a bed of granulations, which, overarching, had united to one another, and imprisoned the pessary for one-half of its circumference. It was removed by a bloody dissection. The other having been untouched for five years, the mucous membrane had grown over about one-third of its circumference. A physician had attempted its removal, but the hemorrhage proving alarming, he sent her to me. By cutting its free segment through with a pair of bone-forceps, I readily removed it; but the bleeding was free enough to need a tampon.

Such marked ulcerations I have never seen caused by the

closed-lever pessary; but it often rubs off the epithelium behind the cervix, and therefore needs some watching. An abrasion usually gives warning by a peculiar reflex pain in the back of the head and in the nape of the neck. It should always be suspected whenever a pink or an irritating and offensive leucorrhœa shows itself. To heal these abrasions it will be needful sometimes for the woman to go to bed, so as to take off the gravity-pressure of the womb. Sometimes it will be best either to remove the pessary for a few days, or to replace it by another with a different curve.

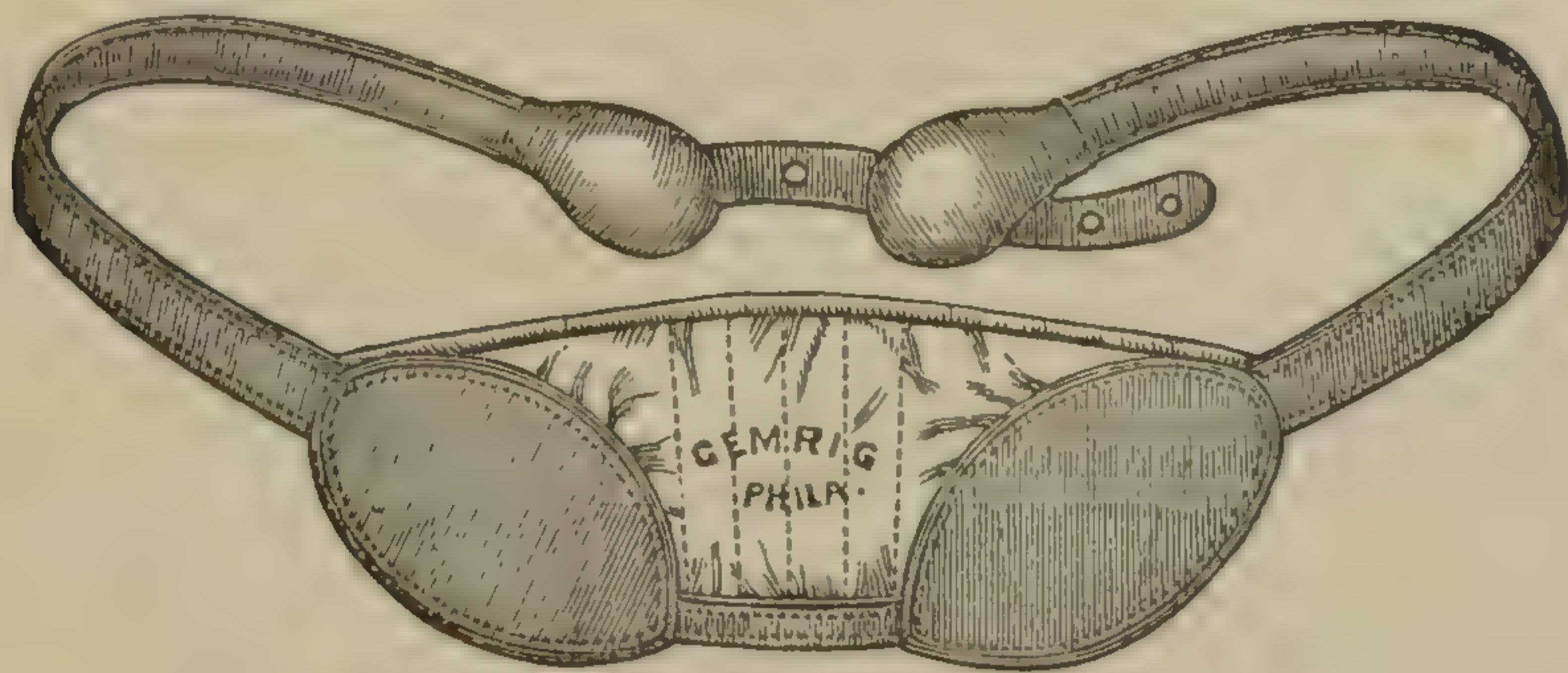
To prevent these abrasions, and also to ease the pain often set up by the pessary on a tender or a heavy womb, I have found it a very good plan for the woman to assume several times a day the knee-breast posture, and to permit the air to enter the vagina by separating the labia. This will cause the belly and its contents to sag down, and will necessarily carry up the womb off from the pessary. To Dr. H. F. Campbell, of Georgia, are we indebted for this "Pneumatic Self-replacement of the Uterus," as he calls it, which I shall describe in a future lesson on prolapse of the ovaries, where it comes admirably into play. Finally, let me add that, before introducing any kind of vaginal pessary, it is good practice to put the woman in the knee-breast posture or in the semi-prone posture, and admit air into the vagina. In this way the displaced womb will be replaced, and be the more ready to receive the support of the pessary.

ABDOMINAL SUPPORTERS.

Within a few years I have become convinced, that much advantage can be gained from a judicious use of pelvic or abdominal braces as adjuvants to the treatment of uterine disorders. Alone, they may not cure, but they certainly will often palliate those symptoms which are referable to pressure upon the pelvic organs. They seem to me to be especially indicated whenever a pessary fails to relieve the woman of the feeling that the lower portion of her abdomen needs an external support, a support which she instinctively seeks to give by

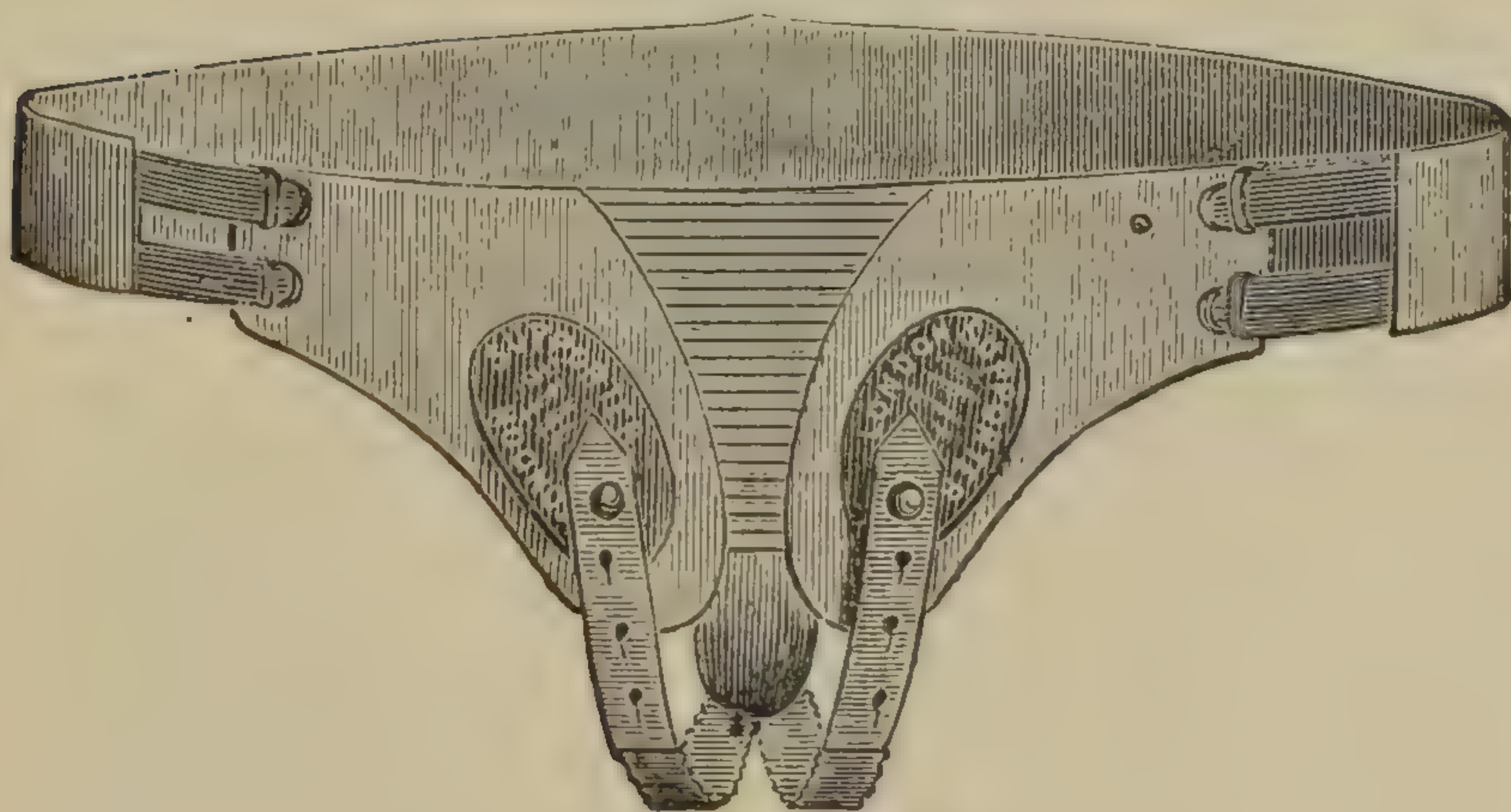
pressure with her hands. There certainly is, in my experience, no surer way of getting a bed-ridden, hysterical woman on her feet again, than by their use. The moral effect of their adjustment is, in such cases, good; and by interposing a shelf upon which the abdominal viscera partly rest, they relieve a congested womb or an irritable ovary from undue pressure. The proprietary character of most of these instruments has very naturally prejudiced the minds of the profession against them; but *fas est ab hoste doceri*. The best ones are Hood's Abdominal Supporter (Fig. 65), the London Abdominal Supporter (Fig. 66), and Fitch's Abdominal Supporter (Fig. 67).

FIG. 65.



HOOD'S ABDOMINAL SUPPORTER.

FIG. 66.



LONDON ABDOMINAL SUPPORTER.

The *rationale* of their action is briefly as follows: From the oblique inclination of the pelvis to the spinal column, which

is produced by the natural hollow in the back and by the more or less sigmoid shape of the spine, the axis of the trunk does not coincide with that of the pelvis. The womb and the ovaries, therefore, lie in a measure under the shelter of the sacral promontory and of the lower lumbar vertebræ. For the same reason, the sum of the weight of the supernatant abdominal viscera is spent upon the smooth surface of the pubic bones, and upon the adjacent abdominal wall, but not upon the womb, although it is the lowest of the pelvic organs. The little pressure to which it is subjected is not in a vertical line, but in an oblique one.

A displaced or a flexed womb may in itself give rise to no unpleasant symptoms whatever; but let it once take on a congested or an inflamed condition, and the weight of the

FIG. 67.



FITCH'S ABDOMINAL SUPPORTER.

abdominal viscera at once becomes oppressive. If now, pessaries being found inadmissible, a suitable brace be put on, a portion of this load is taken off by its pad, which, by pressing the abdominal wall upward and inward toward the sacral promontory, forms a shelf upon which the viscera rest. Further, by this virtual shortening of the conjugate diameter of the superior strait, the space into which the viscera tend to

settle is lessened, and, consequently, the womb is to that extent the more protected from sudden succussions.

Again, whenever by the absorption of the fat-packing in the omentum and in the abdominal walls, by the general decrepitude of old age, or by the muscular debility of ill-health, the retentive power of the abdomen is lost, the woman's figure often becomes greatly changed. Her spine now loses its double curve and becomes bow-shaped; her shoulders droop, her chest bends forward, she stoops; the pelvis, departing from its obliquity, becomes more nearly at a right angle to the spine; and the axis of the upper strait, instead of striking a point in the linea alba below the umbilicus, tends now to coincide with that of the trunk. As a consequence the intestines crowd down into the pelvic cavity, and the sum of their weight now converges, not upon the pubic bones and their adjacent abdominal muscles, but directly and vertically upon the nicely-poised reproductive organs. But since the womb and the ovaries were never intended by nature to be the Atlas of the abdominal organs, the one resents the burden, and the other bends and sinks under it. A pessary, by shoring up the womb, gives some relief, but common sense points clearly to the necessity of bringing back the erect carriage, of restoring the sigmoid curve to the spine, and of swinging the pelvis back into its oblique position. To meet these indications a brace is needed, one which is both abdominal and spinal.

Guided by these hints, I feel sure that some of you will be able to get once more upon her feet a patient who has been doomed by her friends to a bed-ridden life, on account of some supposed spinal affection. For let me here remark that, since most women in delicate health exhibit one or two very tender spots in the spine, difficult locomotion dependent upon uterine or ovarian trouble, or upon nerve-prostration, is very liable to be mistaken for "spinal irritation" or for "spinal inflammation."

LESSON XVI.

DILATATION OF THE CERVICAL CANAL.

RAPID DILATATION FOR THE TREATMENT OF PAINFUL MENSTRUATION AND STERILITY FROM FLEXION; SLOW DILATATION BY TENTS.

GENTLEMEN: While our patient is getting her ether in the waiting-room, let me give you her history. It is a history which will soon be to you as familiar as household words, whether you practice in cities or at cross-roads. She is a young woman who has been married eight years; but she has never conceived, and since puberty has suffered from very painful menstruation. Since her marriage, her periods, as is usual in such cases, have been getting more and more painful. At present, not only are they unbearable, needing large doses of opium, but she is yearning to become a mother.

Now, what lesions shall we probably discover in this case? Ten to one, a womb bent forward on itself, and a narrow uterine canal. True, the displacement may turn out to be a retroflexion, but this is a lesion almost peculiar to the child-bearing womb, while ante flexion is the natural condition of the nulliparous womb. Here, let me disabuse your minds of a prevalent error, viz., that ante flexion in itself is a pathological condition. Many text-books speak of this flexion as a lesion, and exhibit many forms of pessaries devised to rectify this so-called displacement. But in the great majority of cases neither ante flexion, nor, for the matter of that, anteversion, is pathological. In almost every unmarried or every barren woman you will find the womb either bent forward or tilted forward, and resting on the bladder; for this in varying degrees is its natural position. The mistake made, is in attri-

buting to this natural position of the womb the various forms of pelvic trouble, especially that of irritability of the bladder, to which women are so liable. But the kinship between the brain and bladder is a remarkably close one. This has lately been studied by two Italian physiologists, Mosso and Pellacani, who go so far as to contend that "every mental act in man is accompanied by a contraction of the bladder." The irritability of the bladder is then one of the first symptoms of loss of nerve control. Every body is liable to it. You, on examination day, will be annoyed by it. Many a lawyer before pleading an important case, and many a clergyman just before delivering a discourse, is compelled from sheer nervousness to empty the bladder. So it is with the lower animals, which, when frightened, micturate involuntarily. A nervous bladder is then one of the earliest phenomena of nervousness. Now, a hysterical girl, or a woman whose nervous system has collapsed under the strain of domestic cares, consults a physician for such symptoms of nerve-prostration as wakefulness, utter weariness, a bearing down feeling, backache, and perhaps, above all, an irritable bladder. Upon making a digital examination, he usually finds the fundus of the womb resting on the bladder, and at once jumps to the conclusion that the whole trouble is due to the pressure of the womb on the bladder, viz., to the existing anteflexion or to the anteversion, as the case may be. He now makes local applications, and racks his brain to adapt or to devise some pessary capable of overcoming the supposed difficulty, forgetting that the upward, or shoring, pressure of the pessary on the bladder must be greater than the corresponding downward, or gravity, pressure of the womb. There is, in fact, no pessary but the dangerous stem-pessary which can meet the end without pressing upon a fold, or double thickness, of the bladder. But, very fortunately, anteflexion is not often pathological. It is certainly not pathological in the foregoing instances; for the symptoms, especially the vesical ones, are not due to the pressure of the womb upon the bladder, but to sheer nervousness, or nerve-prostration, which is

the entity to be treated, and not the womb. There are exceptions to this rule, but not many; for instance, a womb, heavy from subinvolution or from the presence of a fibroid, may make uncomfortable pressure upon the bladder.

If anteflexion is the natural position and condition of the womb, when is it pathological? It is pathological whenever it is the cause of dysmenorrhœa or of sterility. Usually dysmenorrhœa and sterility are associated, but occasionally the latter is the only symptom; for it is evident that the crooked womb can more readily expel fluid contained within it, than admit a fluid outside of it. The phenomena of a typical case of dysmenorrhœa from anteflexion or from retroflexion, are as follows: At the outset of menstruation, the first few drops are somewhat painful. The pain then increases in severity until, reaching its acme, a slight gush of menstrual fluid takes place, followed by a lull in the sufferings. The pain then gradually increases until it culminates in another gush. The meaning of this is, that the bend in the womb imprisons the menstrual fluid, which goes on collecting in the cavity until the swelling up of the womb straightens out the bent portion, dilates the narrow canal, and allows the pent-up contents to escape,—just as the coils of a hose first swell and then straighten out before the water can flow through them. Relief from pain lasts until the fluid begins again to collect. This is called stenosis from angulation.

Sometimes a girl has little or no pain at her menstrual periods: she marries, does not conceive, and by and by dysmenorrhœa sets in, which goes on increasing. What is the explanation of this? It means that the flexed canal of the womb was originally just large enough to permit the slow escape of the menstrual fluid; but that the congestions from sexual intercourse have caused a thickening of the lining membrane of this canal, which has narrowed its calibre. Then again, the uterine efforts to force out the pent-up fluid cause the various tissues of the womb to take on hypertrophy. We see this also in unmarried women, the dysmenorrhœa increasing with their age. Nature intends that the periodical

congestions of the womb should be interrupted by pregnancy and lactation; and without those interruptions the mucous lining of the womb is liable to thicken, and by its thickness to narrow the canal. If then to these menstrual congestions be added the sexual congestions of marriage, this hypertrophy is greatly increased, and the barren wife suffers more than the old maid.

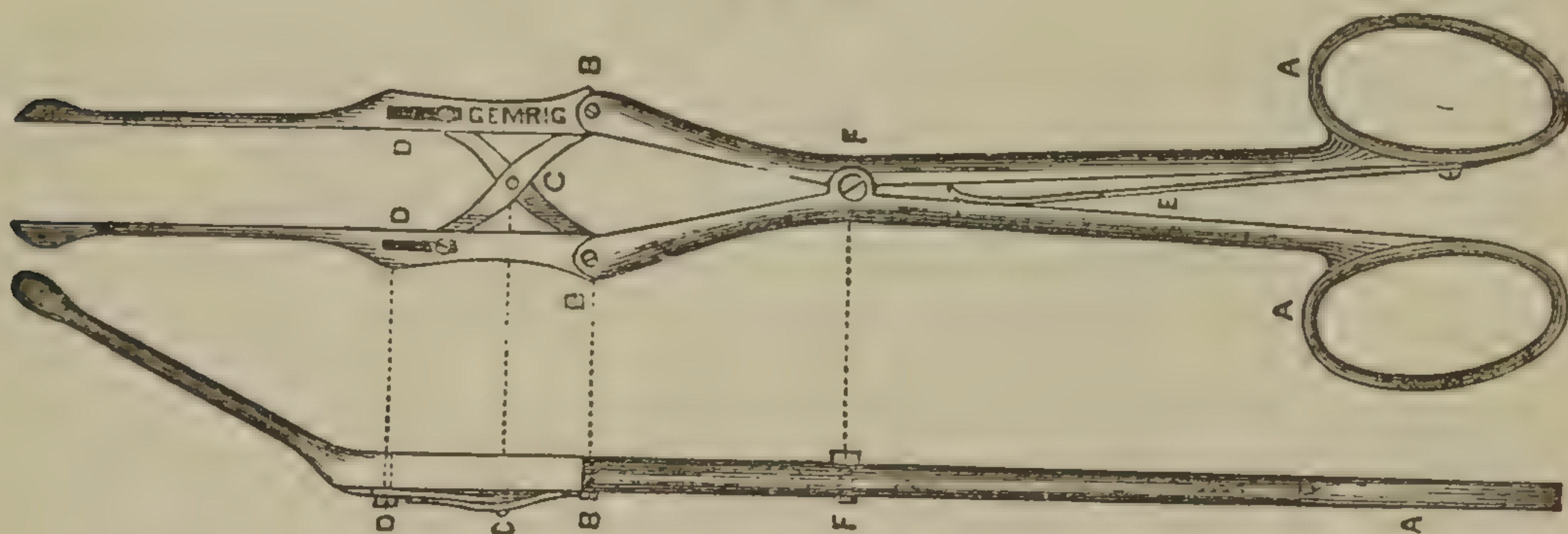
But here comes our patient. Let me examine her. Sure enough, she has an anteflexion, for through the anterior wall of the vagina I feel the body of the womb resting upon the bladder. The cervix is long and conical, the os externum very small.

I pass the sound. It stops, as you see, at the internal os,—viz., at the beginning of the bend,—and I cannot coax it in any further. By introducing the speculum, and straightening the womb by traction made with a tenaculum, the sound now goes in, but even yet with difficulty. It gives a measurement of nearly three and a half inches, which is a large measurement for a young woman who has not borne any children. This hypertrophy is owing partly to such repeated congestions as I have just described, and partly to the muscular efforts made by the womb to extrude not only the menstrual fluid but its mucous secretions.

Now, what is the remedy for this condition? For a number of years the operation most in vogue was the cutting, or bloody operation of Sims. By it the canal is enlarged by incisions. But the objections to this plan are: that it is a dangerous operation, having caused the death of many patients through peritonitis; that it is not a very successful operation, as the incisions are liable to heal up and the dysmenorrhœa to return; and, finally, that it always deforms the cervix, and sometimes causes lesions analogous to those resulting from a natural laceration during labor. I shall not, therefore, burden you with the details of this operation, which fortunately is falling into disuse. Then again, the cervix is, at the present day, often dilated by tents or by graduated bougies; but the former is dangerous, and both are painful, tedious, and unsatisfactory.

The operation which I can recommend to you most highly, and one which I shall now perform on our patient, is that of forcible dilatation. The instruments which I use are two modified Ellinger dilators of different sizes, made under my supervision by Messrs. J. H. Gemrig & Son, of this city. Ellinger's model is the best, on account of the parallel action of the blades, which dilates the whole track of the canal uniformly. The smaller of these dilators has slender blades (Fig. 68), and it pilots the way for the other, which is more powerful, having blades that do not feather. The lighter instrument needs only a ratchet in the handles, but the stronger

FIG. 68.



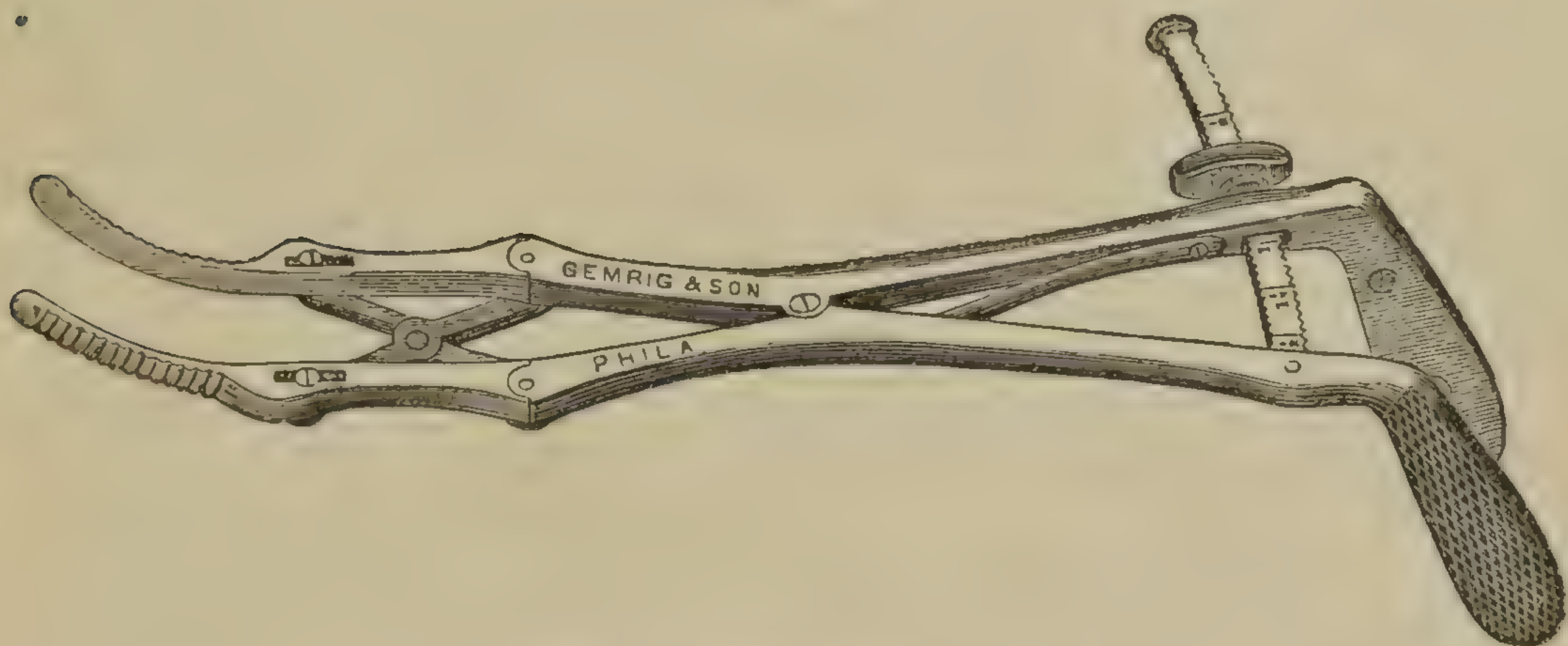
ELLINGER'S SLENDER DILATOR.

one should have a screw by which the handles are brought together. Lest the beak should hit the fundus uteri and seriously injure it when these instruments are opened, their blades are made no longer than two inches, and are armed with a shoulder which prevents further penetration. The larger instrument opens to an outside width of one and a half inches, and its blades are roughened, or corrugated, by shallow grooves in order to keep them from slipping out. This dilator has also a graduated arc in the handles by which the divergence of the blades can be read off (Fig. 69).

In a case of dysmenorrhœa, or in one of sterility from flexion or from stenosis, as in the woman before us, my mode of performing the operation of dilatation is as follows: The patient is thoroughly anæsthetized, and a suppository containing one grain of aqueous extract of opium is slipped into

the rectum. She is then turned on her back, and drawn to the edge of the bed, each knee being supported by an assistant. The light must be good, so that the operator can see what he is about. My bivalve speculum being now introduced, the vagina is well swabbed out with a five per cent.

FIG. 69.



GOODELL'S POWERFUL DILATOR.

solution of carbolic acid. A 1:2000 solution of corrosive sublimate would probably be a better germicide, but it tarnishes the speculum too much. By the aid of a strong uterine tenaculum, the cervix is steadied and the smaller dilator is introduced as far as it will go. Upon gently stretching open that portion of the canal which it occupies, the stricture above so yields that, when the instrument is closed, it can be made to pass up higher. Thus by repetitions of this manoeuvre, little by little, in a few minutes' time a cervical canal is tunnelled out which before could not admit the finest probe. Should the os externum be a mere pinhole, or it be too small to admit the beak of the dilator, it is enlarged by the closed blades of a pair of straight scissors, which are introduced with a boring motion. As soon as the cavity of the womb is gained, the handles are gradually brought together, and allowed to stay so for one or two minutes. The small dilator being now withdrawn, the larger one is introduced and the handles are then slowly screwed toward one another, about fifteen minutes being usually needed for full dilatation.

If the flexion be very marked, this instrument, before full dilatation of the cervix, is withdrawn, and reintroduced with its curve reversed to that of the flexion, and the final dilatation then made. But in doing this the operator must take good care not to rotate the womb on its axis, and not to mistake the twist for a reversal of flexion. The ether is now withheld, the speculum filled with the solution of carbolic acid, and the dilator kept *in situ* some ten minutes, when it is closed, removed, and a ten-grain iodoform suppository placed in the vagina. Occasionally a slight flow of blood will last for several days after the operation, simulating the menstrual flux. Often the flux is precipitated or it is renewed, if the operation follows or precedes it too soon. The best time for dilatation is, therefore, midway between two monthly periods. Were the case before us a retroflexion, I should, after the dilatation, put in a pessary long enough to span the angle of flexure. This never fails to straighten out the womb, and in time to restore it.

Although this operation looks like rough work when compared with the neat, but most dangerous cutting one, our patient will probably need not more than two opium suppositories, and she will complain merely of soreness for one or two days. To forestall any tendency to metritis, she will be kept in bed until all tenderness has disappeared. Pain will be met by rectal suppositories of opium, and by large poultices laid over the abdomen. From this operation I have seen only slight pelvic disturbance, but it has always been readily controlled and has not given alarm. In one case of dilatation complicated by a fibroid of the womb, a uterine colic lasted for several days, but it was finally subdued by asafoetida in large doses, and never became inflammatory. Should the temperature rise and symptoms of pelvic inflammation appear, the ice-bag should replace the warm poultice. But I have not yet met with a temperature high enough to need this energetic mode of treatment, and indeed, I have about come to the conclusion, that, in gynecological surgery, it is not so much the wound that is dangerous as the infection of that wound.

In the great majority of cases I dilate the canal not to the fullest extent of the larger instrument, but, as in the case before us, to one and a quarter inches. Sometimes, in an infantile cervix, which does not readily yield and might give way, the handles are not screwed closer than three-quarters of an inch or an inch; but this is exceptional. Tearing of the cervix has happened in a few of my cases; in two from the sudden slipping out of the beak, and in the others from sheer stretching. Three of these were unmarried and the cervix in each was split posteriorly, nearly half-way to the vaginal junction. The rent looked exactly like the incision of the cutting, or bloody, operation, but it was only half the length of the latter. As it kept the os externum patulous and could not do any mischief, I did not sew it up. Another case was that of a multipara, whose uterine canal had been nearly closed up by applications of silver nitrate, made by her physician with the view of curing what he supposed was an "ulceration of the os," but which was a bilateral laceration. The tissues, rendered cicatricial and brittle by the caustic, were torn by the dilator for about half an inch on the right side. Here the hemorrhage was free enough to need styptic applications and a light tampon. I could have stopped it by wire sutures, but this was not done, as it would have defeated the object of the operation.

For slight dilatations, such as for the office treatment of anteversions and of stenosis, or for the introduction of the curette, or of the applicator armed with cotton, the more delicate instrument is quite strong enough, and an anæsthetic is not needed. I also use it in women who object to taking ether; but the operation is then very painful and it has to be repeated several times, while the results are by no means so good as when the canal has been dilated by the larger instrument, and under ether. Occasionally in virgins, in order to save the hymen, I have dispensed with the speculum and have dilated with the more slender instrument, passing it in along my finger; but this cannot always be done, and it is usually unsatisfactory. I was led to this, because on one occasion I

was asked to give a certificate of virginity—in other words, to write and sign a paper stating that before the operation the hymen was intact. I also had to do this in the case of an unmarried woman, whose perineum, in spite of lateral cuts, was badly torn in my efforts to deliver with the obstetric forceps a very large fibroid tumor of the womb. When she returned home, the village crones got up such a buzz of scandal, that I had to go to her defence. Sometimes in a very sharply anteflexed womb, the dilator cannot be made to pass the os internum. This difficulty is overcome by first passing in a surgeon's probe, and then, along it as a guide, the dilator.

After a forcible dilatation under ether, the cervical canal rarely returns to its former bent or former narrow condition. Since lateral extension of elastic bodies antagonizes their length, the cervix shortens and widens, and the exudation provisionally thrown out by the sub-mucous lesions sustained by the dilated part, serves still further to thicken and stiffen its tissues. In other words, the stem-like neck of the pear-shaped womb is shortened, widened, strengthened, and straightened. Hence for straightening out anteflexed or congenitally retroflexed wombs, and for dilating and shortening the canal in cases of sterility, or of dysmenorrhœa arising from stenosis or from a conical cervix, the dilator will be found a most efficient instrument. Sometimes in sharply bent wombs, I put in a stem-pessary immediately after the dilatation. In retroflexions I always put in a pessary long enough to span the angle of the flexion, so as to straighten the womb, by making pressure on the fundus. To this occasionally a stem-pessary is added.

In its results this operation is not an infallible one. I have thrice been obliged to repeat the dilatation, and would like to do so in several cases did the women permit. In a very few cases I have been forced, as a final resort, to nick a pin-hole os externum. But I had not then learned how far I could safely stretch open the uterine canal, and the operation of dilatation was, therefore, not so efficiently performed by

me as it now is through a larger and riper experience, which makes me, year by year, more and more successful in this operation.

It is not to cases of sterility or of dysmennorrhœa only that rapid dilatation should be limited. As before stated, I use it to stretch open the canal for the admission of the curette and of tents, or for the purpose of making applications to the uterine cavity. In cases needing irrigation of the uterine cavity, I first dilate the canal with the slender instrument, and introduce the nozzle of the syringe between the separated blades. This gives a free avenue for the escape of the liquid, and robs of its dangers this form of intra-uterine medication. I also resort to the dilator in order to explore the womb with the finger. For instance, in a given case of menorrhagia in which a polypus or some other uterine growth is suspected, in order to avoid the delay and the dangers inseparable from the use of tents, I put the woman under an anæsthetic, and, after the rapid dilatation of the cervical canal to the utmost capacity of the instrument—viz., one and a half inches—am enabled to pass my finger up to the fundus. This is accomplished either by drawing down and steadying the womb by a volsella forceps fixed on to the anterior lip, or, in thin subjects, by forcing the womb down upon the finger through supra-pubic pressure on its fundus. In this way I have, over and over again, at one sitting discovered a uterine growth, twisted it off, and removed it. Usually in these cases more difficulty has been experienced in removing the polypus or other growth through the narrow canal, than in twisting it off from its uterine attachment. It often has to be wire-drawn before its removal can be effected, and sometimes it will be found needful to enlarge the os uteri by a few nicks. Usually, when the menorrhagia has been free, the cervical tissue is so lax that, after dilatation, the index-finger can penetrate the canal and reach the fundus, but sometimes only its tip can be made to pass the os internum. Yet even this limited degree of penetration is commonly quite enough to decide the presence of an inside growth. If it be not enough,

I invariably search for the growth with a small pair of fenestrated forceps, and I have repeatedly seized and removed one, the existence of which was merely suspected. After such operations the uterine cavity and the vagina are thoroughly washed out with a two and a half per cent. solution of carbolic acid.

I am sorry to say that I have not kept full records of all my cases of rapid dilatation. For instance, I have rarely tabulated office cases of dilatation, in which ether was not given. Nor has any note been made of cases in which dilatation was performed under ether for curetting, for digital exploration of the endometrium, or for the removal of uterine growths. I have tabulated merely cases of dysmenorrhœa, in single or in married women. In the married, with but two exceptions, caused by stenosis of the os uteri from the abuse of silver nitrate, painful menstruation was associated with sterility.

Including all the cases of dilatation performed under ether, I must have had nigh four hundred cases. I have limited myself to these cases because the use of an anæsthetic implies full dilatation—one in which serious injury, if ever, would most likely be sustained. Yet, there has not been a death or a case even of serious inflammation, in my practice, and the results have been most satisfactory—far more so than when the cutting operation was performed by me.

Let me read to you a brief abstract of the statistics of my cases of dysmenorrhœa: Of single women, there were one hundred and twenty-two cases; of married, one hundred and forty eight; making in all two hundred and seventy. Of the unmarried, thirty-four were unheard from after the operation, leaving eighty-eight from which any data could be obtained. Of these, fifty-five cases were virtually cured; twenty-five more or less improved; and eight were not at all improved. Of these eight that were not benefited by the operation, five subsequently had their ovaries removed—one of them by another physician, and four by myself; of the latter, one died. In each one the ovaries had become so changed by cystic or by interstitial degeneration as to make the dysmenorrhœa

otherwise incurable. Of the twenty-five improved, there was one on whom oöphorectomy was also performed; for, although the dysmenorrhœa was partly relieved by dilatation, ovarian insanity and menorrhagia were not. The operation was a successful one, and my patient was not only cured of her hemorrhages, but she regained her reason. Out of these cases, the majority, although not wholly cured, were greatly improved. For example, one of them was formerly bed-ridden during the whole period of her menstrual flux, and had then to take large doses of morphia. She also suffered at those times from hæmatemesis and epistaxis. Since the operation she experiences pain for merely two hours, needs no anodyne, and has lost her ectopic hemorrhages. Her gain in health and flesh has been great. Another one, who was wholly crippled by her sufferings and made nervous by the dread of them, is now a busy nurse. For one hour at every period she suffers acutely, but not enough to overcome her dread of taking ether and of having a second dilatation performed.

Of those cured, two had Sims's cutting operation performed previously without benefit, and were afterward dilated; three were dilated a second time before a cure could be effected. The word "cured" in some of these cases, does not mean that the women were wholly free from any pain whatever, but that they did not suffer sufficiently either to go to bed or to take any stimulants or anodynes. The history of several cases merits more than a mere allusion. The sufferings of one of my patients at every monthly period had always been great, but while she was at a boarding-school they grew so excruciating as to cause furious delirium at those times. This finally culminated in permanent insanity, with suicidal impulses. While in this condition she was placed in my hands. After rapid dilatation of the cervical canal, the dysmenorrhœa wholly disappeared. The exemption from pain toned down some of her more extravagant delusions, but she did not wholly regain her reason until a few months afterward. She is now free from all menstrual pain, and is in the complete possession of her mental faculties.

A Hebrew lady, whose health had suffered from dreadful dysmenorrhœa, was so greatly improved by one dilatation, that her physician and her friends were amazed at her rapid restoration to health. Not long afterward the doctor asked me to perform the same operation upon another one of his patients, who was, if anything, worse. Her sufferings were so severe that he wrote, "I fear that another period might kill her," and urged an immediate operation. The cervix in this case was conical and very dense. Fearing a tearing of the parts, I screwed the instrument very slowly up to one inch and a quarter, and kept up this amount of dilatation for some twenty minutes. The cervix did not sustain any injury. The canal has since stayed open, and she is free from all menstrual pain. Another case was that of an unmarried lady, sent to me from a distant State, whose sufferings at her periods were so great that morphia, however administered, was not potent enough to allay them, and her nervous system became very much shattered. Finally, at her last monthly, she was compelled to have two physicians in attendance on her, who took turn-about in administering chloroform night and day for forty-eight hours. This experience decided them to send her to me. One dilatation of an inch and a quarter wholly cured her.

Of the married, eighty-five were heard from. Of these, fifty-nine were virtually cured, twenty-one improved, and five unimproved. Out of these eighty-five cases, thirteen were not in a condition to conceive: seven of them from fibroid tumors of the womb, two from destructive applications of silver nitrate to a torn cervix, three from being over forty-one years of age, and one from being a widow. This leaves but seventy-two capable of conception, and of these, fourteen, or about 20 per cent., became pregnant. But the ratio is, in fact, larger, for I know that several of my patients, fearing pregnancy, employed preventive measures after the operation, and I suspected several others of doing the same thing. Then, again, I believe that yet others, who consulted me merely for painful menstruation, have not reported their subsequent preg-

nancies. For instance, of the fourteen cases of pregnancy, five came to my knowledge incidentally and not directly from the ladies themselves. It is not much more than two years ago that I learned, by the merest accident, the subsequent history of a clergyman's wife, whose cervical canal I had dilated eight years ago. She had been making up for lost time by giving birth to twins within a year after the operation, and later to several other children. She had been married eight years before she came to me, and had had her cervical canal dilated by tents, and slit up with Peaslee's metrotome by a skilful surgeon.

But, while you can expect much from this operation whenever it is performed for dysmenorrhœa caused by flexion or by stenosis, you cannot be so sanguine with regard to its results in sterility. The reason of this is, that sterility associated with dysmenorrhœa often leads to such tissue changes in the womb as in time to make it incapable of forming a nest for the ovum, which, therefore, either escapes or perishes.

UTERINE TENTS.

A few words in regard to slow dilatation of the cervical canal by tents: Since their use is attended with much pain and with danger from septicemia, I never employ them when the dilator can take their place. But sometimes, in order to make a digital examination of the endometrium, or to operate within the uterine cavity, the cervical canal must be opened more widely than can be effected by the dilator.

Tents may be made indifferently of sponge, laminaria, tupelo-root, or of slippery-elm bark. By the gluing together of two or three slips of the last, very good-sized tents can be constructed. Just before they are used they should be sterilized by being rubbed with soap and then well coated with salicylic acid. Immediately after a tent has been put in, a suppository containing one grain of opium extract should be slipped into the rectum, so that, by the time the tent is beginning to swell and to give pain, the opium will be taking effect. These suppositories will need to be repeated, and six

of them should, therefore, be on hand; for the pain of the dilating process is often very great. Sponge and laminaria tents ought not, as a rule, to be left in longer than twenty-four hours. The cervix, while they are in, should be irrigated every two or three hours, during the waking hours, with a 1:4000 solution of corrosive sublimate. Such detergent injections saturate the sponge and correct the fetor. They also, by imbibition, and by capillary attraction, pass up into the uterine cavity, and thereby lessen the risk from septicemia. When a tent is put in as a cervical plug to arrest a uterine hemorrhage, these detergent injections are not needed; for the blood that will ooze past or through the tent, by washing away the putrid secretions, keeps it sweet. It then can be kept in for over twenty-four hours. For this reason a tent may, with comparative safety, be put in the day before that one on which the catamenia are expected, and be kept in during the flow. This has been repeatedly and successfully done for sterility arising from stenosis; but for this purpose the dilator is by far my preference. The slippery-elm tent can be left in much longer, as it softens down, and becomes dissolved by the discharges. Although inferior in expansive power to the other three, yet it will be found of value in cases requiring no very great dilatation, but a prolonged treatment, such as in flexions. The introduction of tents will be much facilitated by the previous use of the uterine dilator, and by steadying the cervix with the tenaculum or the volsella. By this means they can often be slipped in without the use of the speculum. Much time and safety will be gained if, after the introduction of one large sponge tent, it be surrounded by a fagot of smaller tents, made of laminaria, or sea-tangle.

Let me here impress upon my readers the importance of dilating the cervical canal with but one introduction, or, at the most, with but two introductions of tents. It is not, save with rare exceptions, the tent or the batch of tents, crowded in at the first visit, that is attended with risk, but those inserted at the second or at the third visit. The history of the

reported fatal cases shows that the danger increases with every relay of tents. It is *greater* at the second relay; *greatest* at the third. This is probably owing to the fact that the removal of the first tent, or first batch of tents, more or less abrades the now irritated mucous coat of the canal, and by this raw surface are absorbed the putrid discharges generated and retained by the subsequent tents. It is especially in cases of previous pelvic inflammation, and in those of interstitial or of submucoid fibroids, that I dread the effect of a series of tents, and avoid such a use of them as much as possible. Let me, however, add that, since adopting the plan of injecting the solution of corrosive sublimate, while the tents are in the cervical canal, and especially immediately after they are withdrawn, before operating or before introducing another batch of them, I have not seen any ill effects from their use. Yet I must frankly own that I now very rarely indeed employ them, as the uterine dilator can in the vast majority of cases take their place.

LESSON XVII.

PROLAPSE OF THE WOMB.

PROLAPSE OF THE WOMB FROM SIMPLE DESCENT—PROLAPSE OF THE WOMB FROM HYPERTROPHIC ELONGATION OF THE INFRA-VAGINAL PORTION OF THE CERVIX.

THE term *prolapse of the womb*, in its primary and strictly etymological sense, means the displacement of the womb as a whole by descent. A wider meaning has, however, been loosely given to it, partly because our nomenclature does not keep abreast with the times, and partly because it is not easy to give up a term firmly established by long use. Three widely different affections are now included under it, viz: (a) A simple descent, or settling down of the womb. (b) A hypertrophic elongation of the infra-vaginal portion of the cervix. (c) A (so-called) hypertrophic elongation of the supra-vaginal portion of the cervix. In its present comprehensive sense, then, the term *prolapse of the womb* has come to signify a condition of that organ in which the os externum is found lower down than natural, the position of the fundus being practically disregarded. Apart from the violence thus done to language, there is questionable propriety in including under one general name three distinct lesions, simply because they happen to have one symptom in common.

PROLAPSE OF THE WOMB FROM SIMPLE DESCENT.

In the simple prolapse of the womb—which should more properly be called a substantial descent of the womb,—that organ as a whole, together with its furniture of tubes, ovaries, and ligaments, merely sags down, dragging with it the vagina and the bladder. The degree of displacement being

proportioned both to the weight of the prolapsing body and to the relative relaxation of its supports, the womb will be found either more or less low down in the vagina, or else wholly extruded from the vulva. By many writers, the transitional stages of descent while the womb is yet within the vagina are included under the term *prolapsus uteri*; but when the descent is complete, and the womb wholly or in part outside of the vulva, the condition is called *procidentia uteri*. I must, however, warn you that these distinctive names have not been adopted as such by the profession at large; for by some they are employed interchangeably, as if they were synonyms, and by others in a reversed sense. The terms *complete* and *incomplete* would, therefore, be far more acceptable.

Studies from life quicken our apprehension far better than diagrams or verbal description, and I shall therefore illustrate this form of displacement from one of our patients. This tall, thin woman is unmarried, and, although over sixty years old, is obliged to work hard for a living. Five years ago she began to suffer from a leucorrhœa, from dragging pelvic pains, and "bearing down" sensations. These symptoms had lasted for a few months, when one day, as she was in the act of lifting a scuttle of coals, "something gave way," and with a sudden pang of pain, her womb jutted out from the vulva. At first, after being replaced, it would stay so for one or two days; then, only for a few hours; but now, as long as she is on her feet, it hangs outside of her body. After getting into bed, she is always able to push it back into the vagina, where, unless she coughs, it remains until morning. Of course, by this complete descent of the womb, all her former sufferings have been heightened; while in addition she now experiences difficulty in emptying her bladder, and strains much at stool.

As I expose the parts, you see a pyriform tumor hanging from the vulva. At its apex there is an opening—the os externum—into which I now pass up this sound to a distance of not quite two and a half inches. Now, since I can feel the tip of the sound outside of the vulva, and can with my fingers also define in the tumor the whole outline of the womb;

and since a rectal examination informs me that the womb and vagina have vacated the pelvis, there can be no doubt that we are dealing with a case of complete prolapse, of true hernia, of the womb. The vagina being of course completely inverted, as much so as a stocking turned inside out, constitutes the hernial sac; but the weight of the womb has not been sufficient to smooth out its rugæ. I wish you particularly to note the fact that the womb is retroverted and somewhat retroflexed. This results necessarily from the mechanism of descent, whenever the womb is the primarily prolapsed organ. For, since the womb is, as it were, slung at its middle, viz., the os internum, by its attachment to the bladder, it follows that in its descent the fundus must hug the sacrum, and describe the arc of a circle around the os internum as the centre of motion. Further, since the fundus is the heavier end of the suspended body, and since also it is forced down, by the bulging in of the rectum into the vagina during the act of defecation, whilst the cervix is braced against the pubes or the neck of the bladder, some degree of bending will usually ensue. In fact, a retroversion or retroflexion is but a modified form of prolapse, and it must, perforce, precede the extrusion of a primarily prolapsed womb.

This simple form of prolapse is very generally the result of senile atrophy, and is, therefore, far more commonly found in old women. The pelvis has lost its padding of fat; the lax and wrinkled vaginal column no longer holds up the womb; the retentive power of the abdomen has been weakened by the absorption of the fat-packing in the omentum and in the abdominal walls. By the general decrepitude of old age, or by the muscular debility from disease, the woman's figure becomes altered. Her spine loses its sigmoid shape, her shoulders droop, and her chest bends forwards. Hence, the axis of the superior strait, instead of striking a point on the abdomen below the umbilicus, tends now to coincide with the axis of the trunk. As a consequence, the intestines crowd down into the pelvis, and their weight is spent, not upon the pubic bones and the adjacent portion of the abdom-

inal wall, but directly upon the womb, which now no longer lies under the shelter of the sacral promontory and of the lower lumbar vertebræ.

In younger women, there are other causes which bring about this form of prolapse. For instance, those which increase the weight of the womb, such as congestion, sub-involution, and the presence of a polypus or of a fibroid tumor; those which weaken the lower supports of the womb, and shorten and straighten its line of descent, such as a shallow or a flat sacrum, a relaxed vagina, and a torn perineum; those, finally, which produce succussion or compression from above downwards, as a chronic cough, long-continued vomiting, tight lacing, the wearing of skirts supported from the waist, and last, not least, the prolonged use of the obstetric binder, under the mistaken notion that it preserves the shape. Again, there are acute cases of prolapse from sudden jars, or from abrupt abdominal pressure.

This form of prolapse was deemed almost the only one until Huguier, in 1859, contended that so far from being a common form, it was an exceedingly rare one, and especially so when compared with that caused by a hypertrophic elongation of the supra-vaginal portion of the cervix. As you grow, and as knowledge grows, you will often be constrained to strip off even the poor tatters of some traditional belief; but I cannot yet ask you to adopt Huguier's opinion, supported though it is by many careful observers. My own observations teach me that the simple prolapse of the womb is by no means an infrequent affection of women—preferably of old maids—who have passed the climacteric, or who have been unbraced by chronic ailments. Nor have I failed to find it in younger subjects; although in such cases, either from imperfect involution after labor, from inflammatory action, or from subsequent derangements of circulation in the pendent mass, and also from friction and exposure to the air, there is usually some degree of hypertrophy of the womb, in its totality, however—fundus, corpus, and cervix—and not in one portion to the exclusion of another.

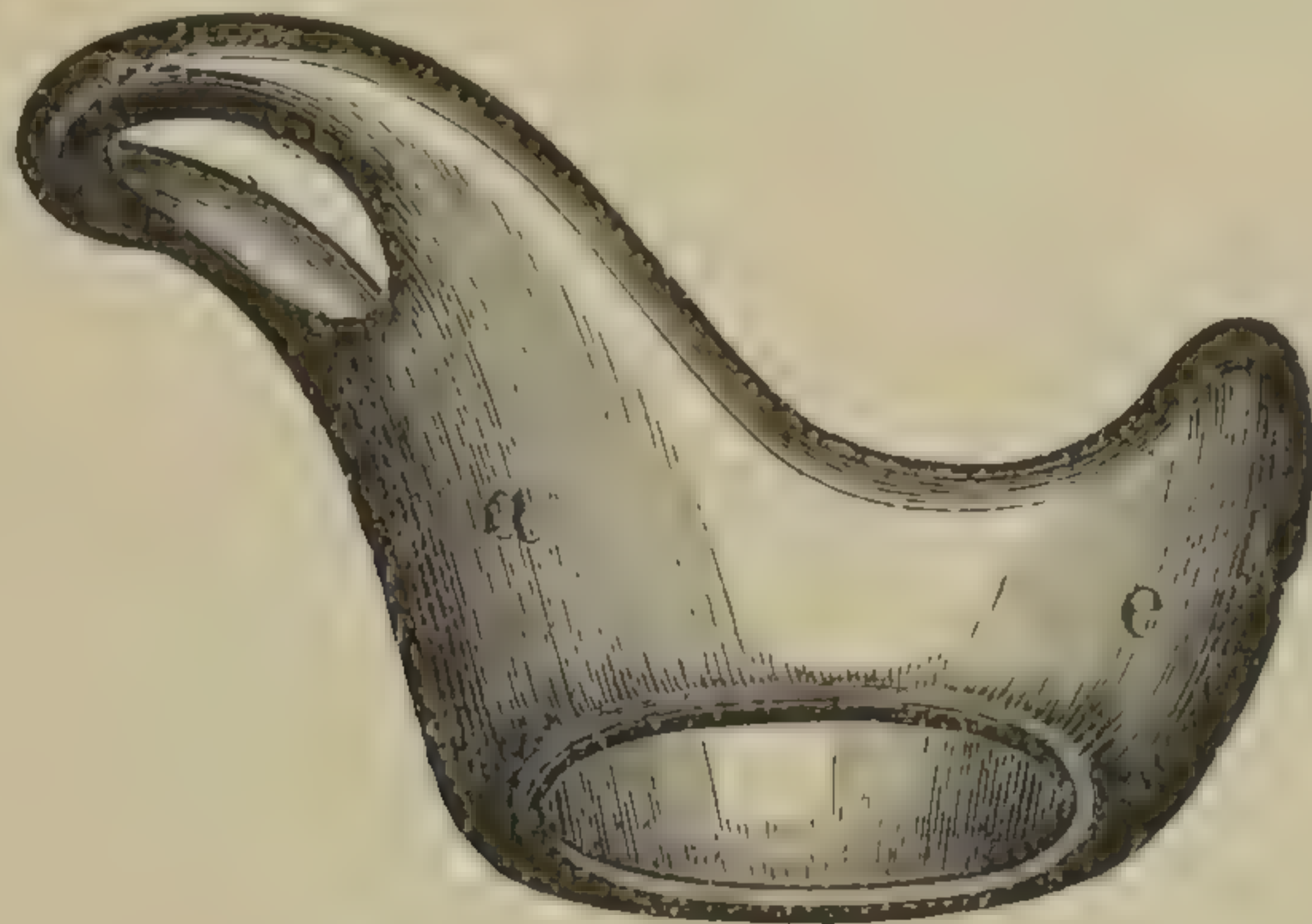
The indication in the treatment of this poor woman is clearly to return the womb and keep it in its place. As the perineum is intact, I think this can be done by the Hodge-pessary or by some one of its modifications, which acts by restoring the posterior wall of the vagina and by propping up the fundus. For, as a rule on account of the flaccidity of the parts, the Hodge-pessary answers better than the Smith-pessary. At the same time I shall enjoin her to keep the contents of her bowels soluble, to avoid the lifting of heavy weights, to wear loose dresses, and to support her underclothing by shoulder-straps.

Should the vagina turn out to have lost its elasticity, or should the floor of the pelvis have become too slack to act as a stable fulcrum, the anterior bar of the Hodge, or closed-lever, pessary will lie below the symphysis pubis—that is, too much in the axis of the vagina—and will consequently slip out. Under such circumstances I may have to resort to the ring-pessary, or I may put in the Hodge-pessary wrong end foremost. Or else, I may either so unbend the downward curve of the anterior bar as to efface it, and make the instrument crescent-shaped; or I may exaggerate this downward curve so as to give the pessary an S-shape. By such a reversal of position, and by these changes of form, the anterior or vulvar bar of the pessary will rise up higher, and lodge behind the symphysis pubis. The relatively long and high anterior arm of Fowler's pessary (Fig. 70), assumes this position behind the pubic bone very well, and makes it a useful instrument in such cases. Since its basin catches the cervix and holds it back, this pessary is also admirably suited for retroversions and for retroflexions. Should the soft parts resent the increased pressure thus brought to bear on them, one may have to fall back on those pessaries which have an external or extra-vaginal base of support, such as I have described in a preceding lesson.

Were this woman's womb hypertrophied or otherwise diseased, in addition to the use of the pessary a special treatment should be addressed to these complications. Had she a

torn perineum, it would be well not only to restore it, but, by prolonging the incisions and dissecting up a vaginal flap, as described in the operation for this lesion, to narrow still

FIG. 70.



FOWLER'S PESSARY.

more the outlet of the vagina. This operation will of itself temporarily prevent the extrusion of the womb; but it can give permanent relief only when it furnishes to the pessary a firm base of support. To maintain an erect carriage, and to restore the sigmoid curve to the spine, a brace with a pad over the lumbar vertebræ answers well. In general, whenever the prolapse is incomplete, and dependent, as it then usually is, upon some congestive or some inflammatory condition, begin your treatment, not only with pessaries, but with the usual remedies for such lesions. By removing the cause, you remove also its consequences. Here let me say that pessaries are sometimes needful, not so much for any great amount of prolapse, as for the dragging of the womb upon an inflamed or a neuralgic broad-ligament. The womb, therefore, needs shoring up, but on the other hand it must not be pushed up so high as to stretch this tender ligament. The happy mean between this upward stretching and downward traction is sometimes very difficult to attain.

In very stubborn cases it may be needful to shorten the round ligaments. This operation I shall soon describe to you.

PROLAPSE OF THE WOMB FROM HYPERTROPHIC ELONGATION OF THE INFRA-VAGINAL PORTION OF THE CERVIX.

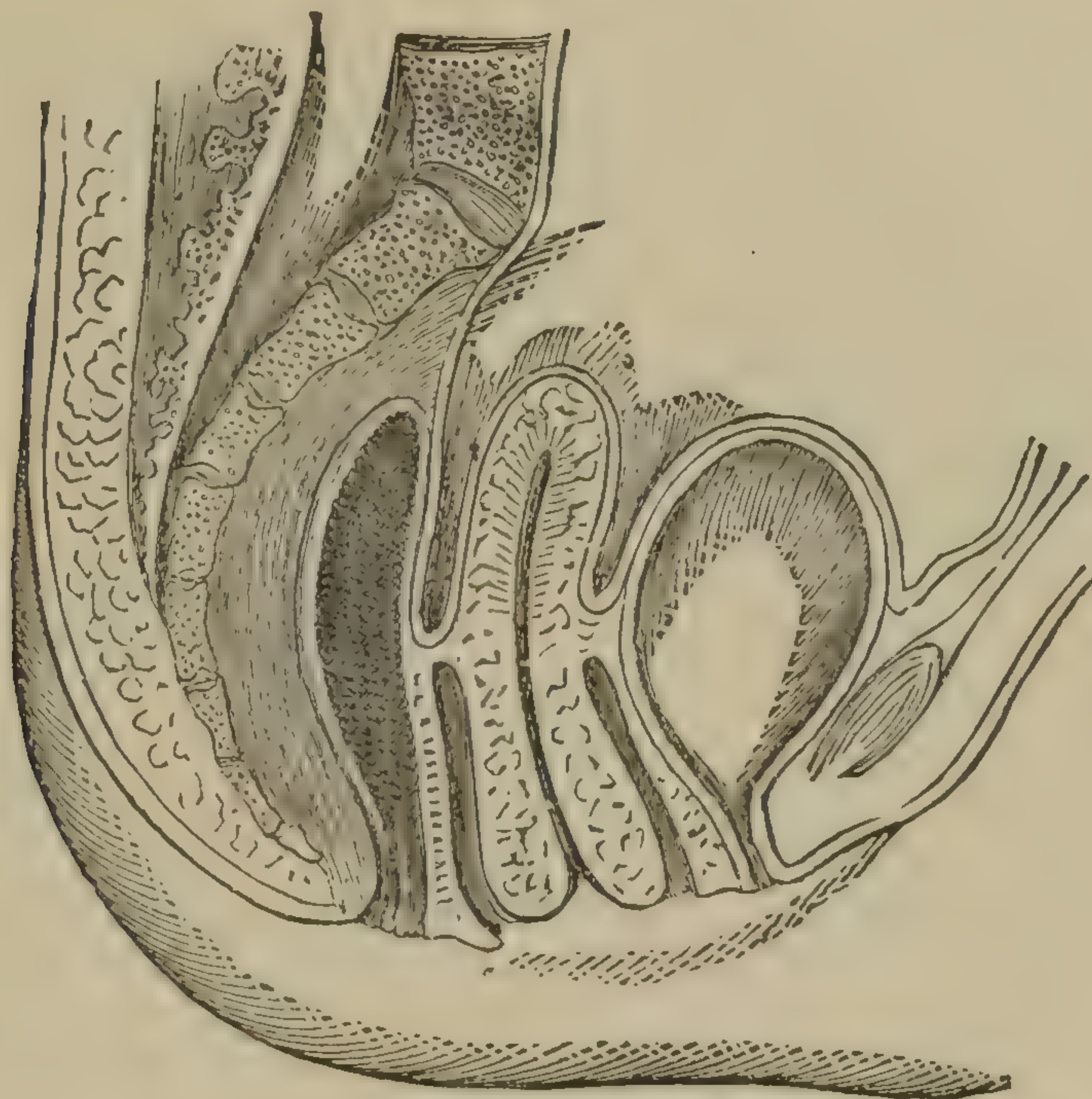
In the second variety of prolapse—that from an *hypertrophic elongation of the infra-vaginal portion of the cervix*—a wholly different condition obtains. Through nutritive activity this portion of the cervix becomes larger and much longer than natural; and although by its increased weight it usually drags down the body of the womb somewhat, yet this is so unessential a sequence that the affection has been termed “prolapse without locomotion of the fundus.” In this variety, the cervix so rarely attains to a length greater than that of the vagina, that I have met with but few examples in which the os externum protruded from the vulva. You are all, however, familiar with that modified form of it, the conical cervix, which is interesting from its bearing upon dysmenorrhœa and sterility, and of which we have had in our clinic many examples.

Whenever the vaginal portion of the cervix is so long as to protrude from the vulva, it is, as a rule, either a congenital condition, or an exaggeration of a congenital condition, and is therefore found in nulliparæ. In child-bearing women, through metritis from the contusions of repeated labors, the vaginal portion often takes on an hypertrophy, but this is then less an elongation than a general increase in every direction. There is yet another form of hypertrophic elongation, which involves one lip of the os, usually the anterior. The prolongation becomes proboscis-like, and from its resemblance to the snout of the tapir, has gained the name of *tapiroid*. All these acquired forms of hypertrophy are usually traceable to the traumatism of labor, or to defective involution.

From this diagram (Fig. 71) you can see that the diagnosis of these affections is not difficult. Their character is sufficiently marked by the unnatural length of the uterine cavity, and by the absence of vaginal invagination and of vesical prolapse. The tapiroid cervix may possibly be mistaken for

a polypus, but as the remedy in each is the same, no harm could happen. In all the varieties of hypertrophy attended by elongation, the redundant portion of the cervix when

FIG. 71.



PROLAPSE FROM GROWTH OF INFRA-VAGINAL CERVIX. (HEWITT.)

troublesome must be cut off. For this purpose the *écraseur*, and the galvano-cautery, have each its advocates. But these instruments leave a large raw surface which can heal only by granulations, and consequently slowly. Besides, the os is in danger of closure from cicatricial contraction. Sims recommends a circular amputation of the cervix by the scissors, the cleanly-cut stump being afterward covered by sliding over and stitching together the edges of the surrounding mucous membrane. Healthy tissue being thus substituted for unhealthy, there will be no return of the disease, and, further, the wound sooner heals. The disadvantage of this operation, however, lies both in cicatricial closure of the os, and in the danger of secondary hemorrhage, the mucous lid not making compression enough to close the open-mouthed vessels. I therefore, in some of my cases, excised the redun-

dant portion of the cervix in a wedge-shaped piece, and brought the flaps together, as in the operation for bilateral laceration of the cervix, by deep stitches passing through the

FIG. 72.

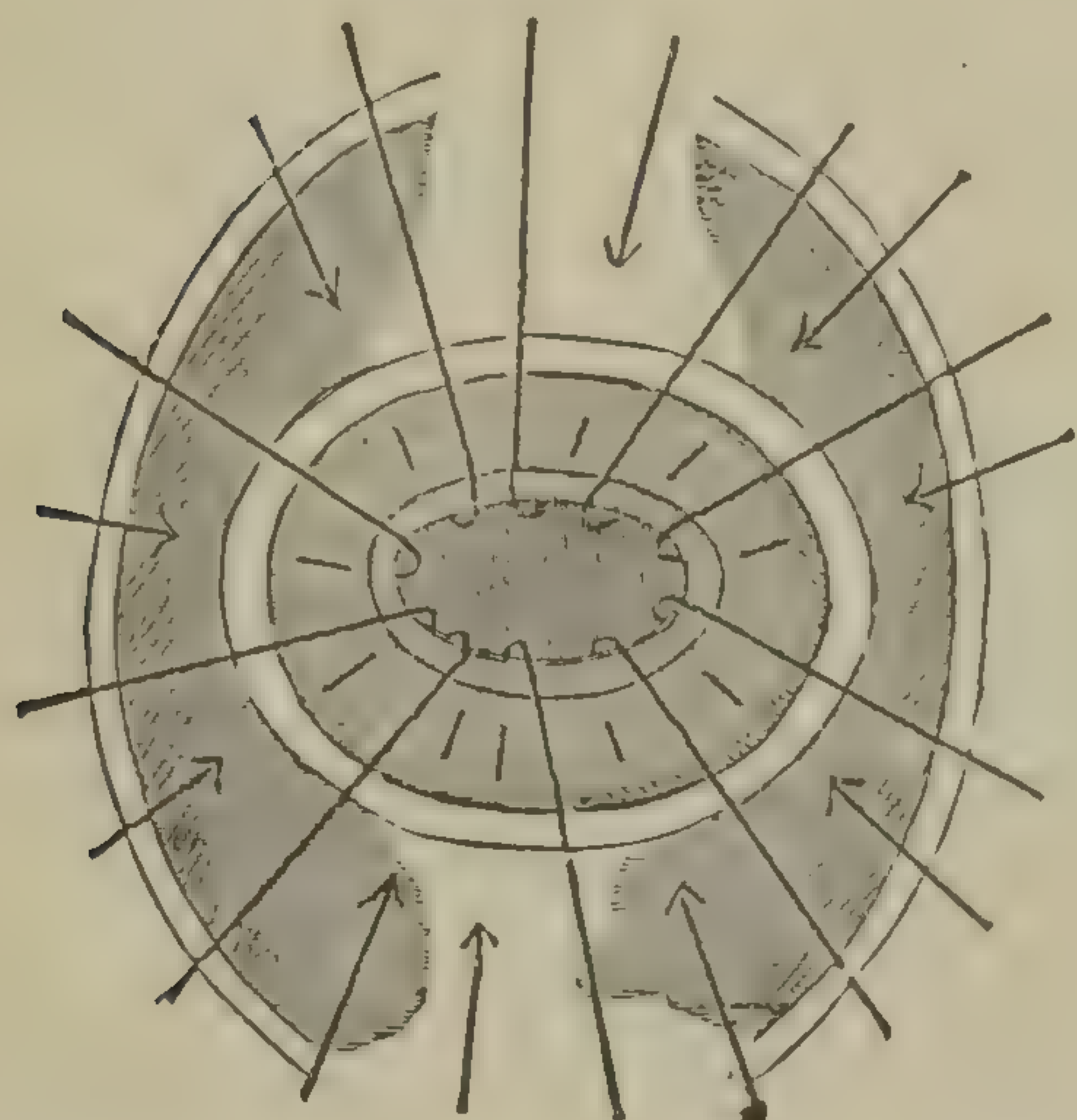
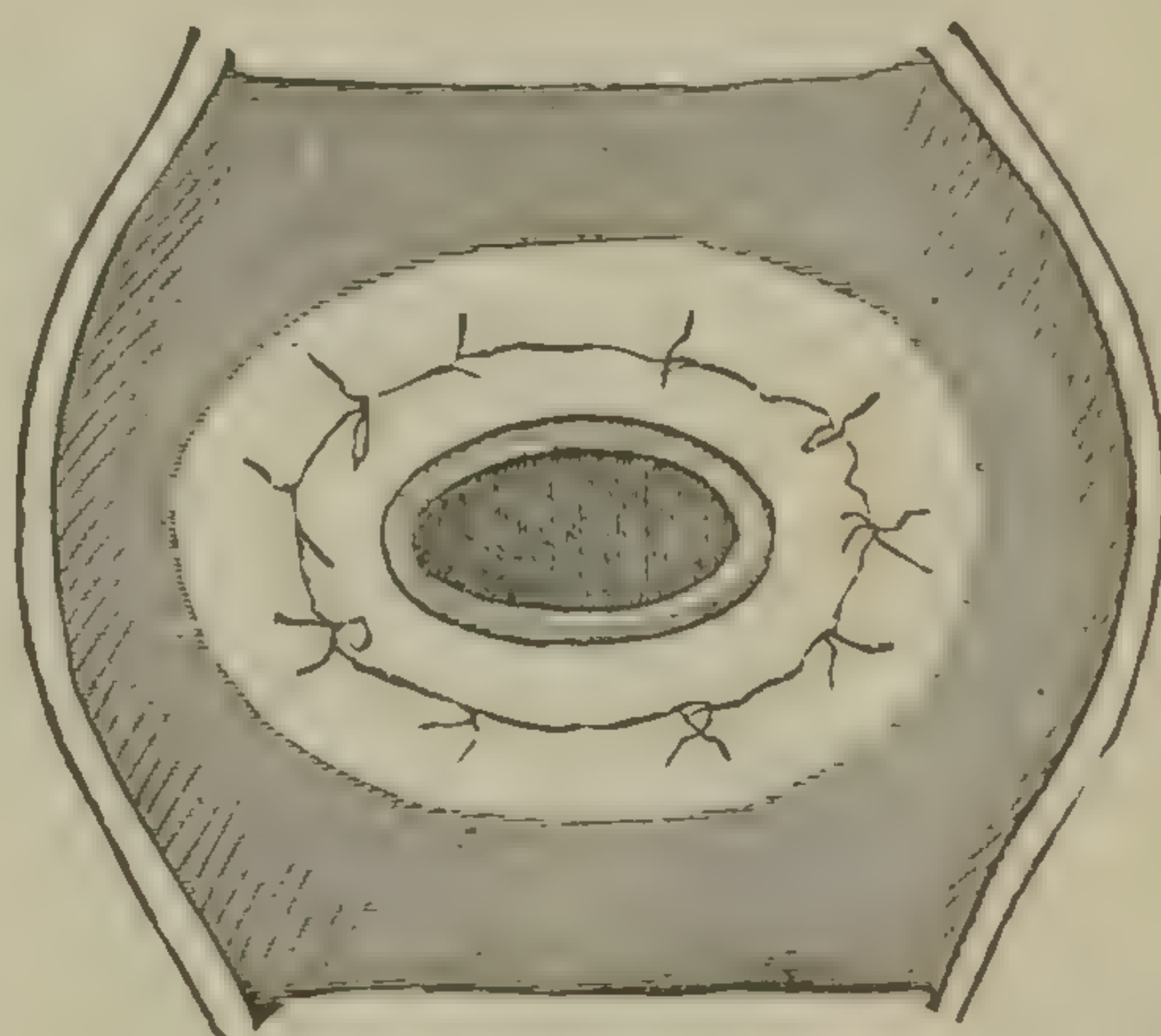
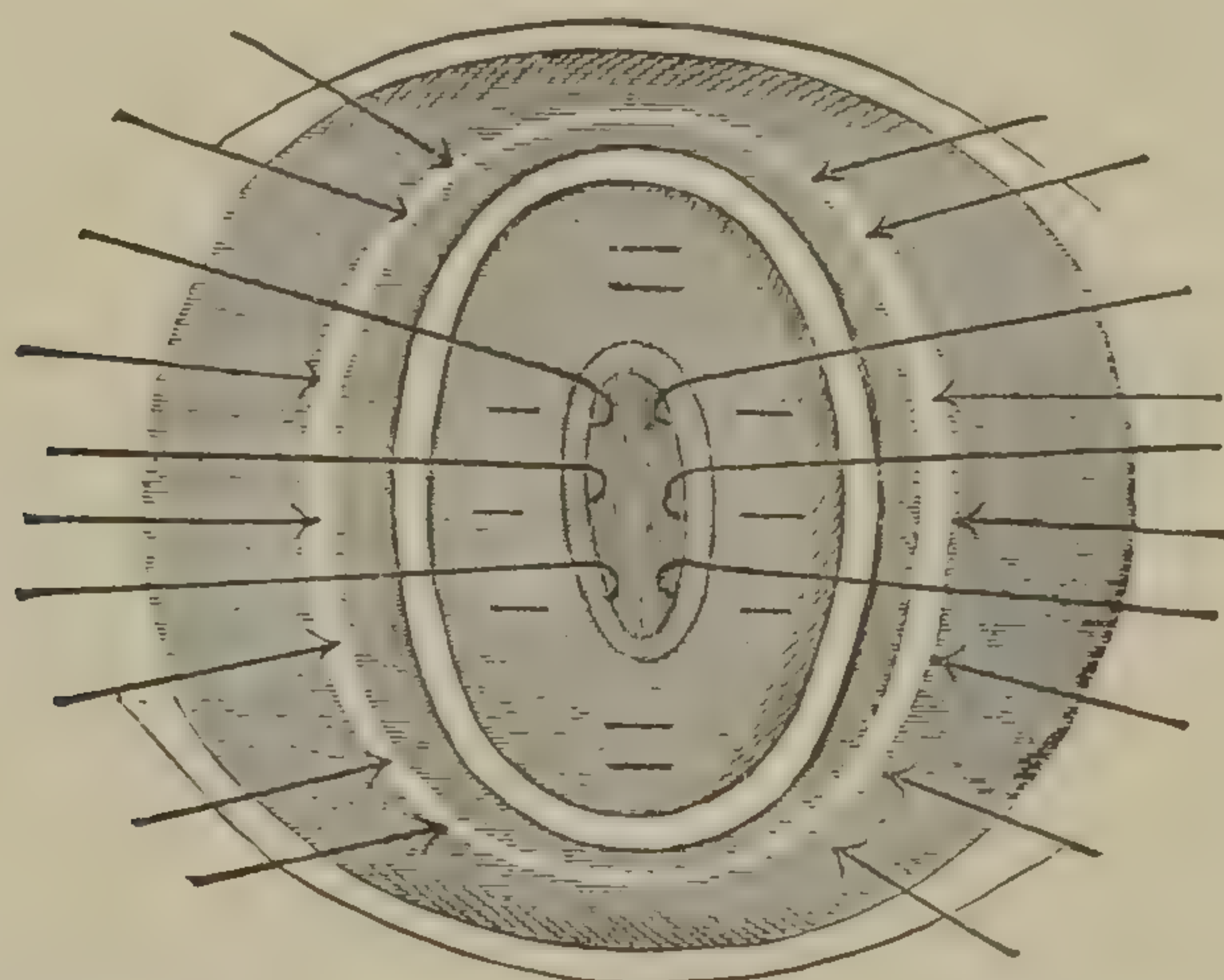


FIG. 73.



whole substance of the cervix. But, finding that the resulting os was usually too small, in other cases I stitched the whole rim of the os to the vaginal mucous membrane (Figs. 72 and 73). In one case I blended the two operations (Fig. 74), by deep and superficial stitches. Each of these opera-

FIG. 74.



tions was followed by good success. They were devised by Hegar, to whom I am also indebted for these diagrams, which illustrate the manner of introducing the stitches.

LESSON XVIII.

PROLAPSE OF THE WOMB FROM ELONGATION OF THE SUPRA-VAGINAL PORTION OF THE CERVIX.

LET us pass now to the third form of prolapse of the womb, that from *hypertrophic elongation of the supra-vaginal portion of the cervix*. But to understand it fully we must first furbish up our knowledge of the anatomy of the parts involved.

The womb is described as having a body (or corpus) and a neck (or cervix). The latter is divided into two unequal portions: that which is comprised between the os externum and the os internum, and which, being alone furnished with Nabothian glands, I shall, for the sake of distinction, call the *glandular* portion; and that which is called the isthmus, viz., the intermediate and contracted portion which unites the fusiform and glandular cavity of the neck to the triangular cavity of the body. Muscular fibers are very sparse in the isthmus. At a point directly above the os internum, they are not to be found; but they become more abundant as the fundus is approached.* The outside length of the healthy multiparous womb is about three inches. Of this the glandular portion of the cervix measures approximately one inch and a quarter, the isthmus one-half of an inch, and the body one inch and a quarter.

By the terminal fibers of the vagina, which gird it at the middle third of its glandular portion, the cervix uteri is still further divided into the infra-vaginal and the supra-vaginal portion. The free extremity corresponds to the infra-vaginal portion; about this there is no dispute. But the supra-vaginal portion of the cervix, as commonly described, is that

* *Schroeder's Obstetrics*, Am. Ed., 1873, pp. 60, 75.

portion of it which lies between the apparent vaginal insertion and the body of the womb. It, therefore, is made to include the upper third of the glandular portion of the cervix, and the whole of the non-glandular portion, viz., the isthmus; and these two portions are generally believed to be the seat of elongation. But this strikes me as an error, founded upon a misconception of the true extent of the supra-vaginal portion of the cervix.

Anatomically, this portion of the cervix is limited to the isthmus, and it is therefore above the glandular portion. For, although the bulk of the vaginal fibres lie below the os internum, and the surface of attachment is to the eye a narrow one, yet in reality it is a broad one, covering two-thirds of the cervix, and reaching up to the os internum, where its fibres end.

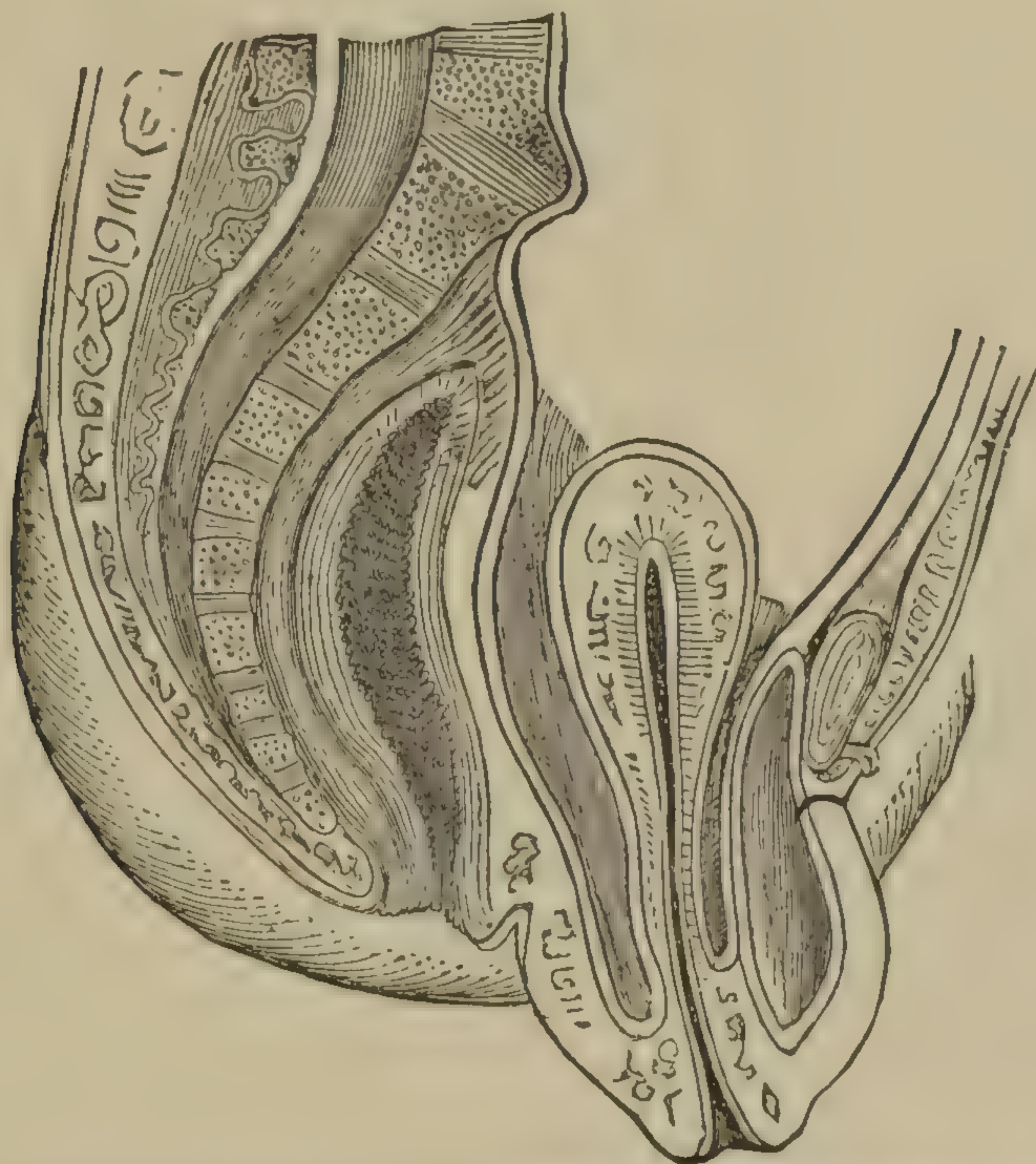
Again, the base of the bladder rests upon the anterior wall of the vagina, to which it is fused by connective tissue, and it is also firmly attached to the anterior aspect of the cervix as far up as the os internum. These fibres of attachment are so closely blended with those of the vagina, that the supra-vesical portion of the cervix is practically the supra-vaginal portion, and each, therefore, lies above the os internum, and, consequently, above the glandular portion of the cervix. I beg you to bear these anatomical facts in mind, because on them hinge the arguments by which I hope to prove to you, that the elongation found in this affection is not essentially hypertrophic, but it is the result of traction and of growth; and that it is not the commonly accepted supra-vaginal portion of the cervix which is principally lengthened out, but rather the supra-glandular portion of the womb, that is to say, the isthmus and the lower portion of the corpus.

By studying this diagram (Fig. 75) it will be plain to you that a wide difference subsists between prolapse of the whole womb by simple descent, and a prolapse from an elongation of the (so-called) supra-vaginal portion of the cervix.

The term prolapse, as applied to this kind of elongation, as well as to that of the infra-vaginal portion, is a misnomer;

because, although in both the cervix may protrude from the vulva, it does so more through elongation than from displacement. There is, in other words, a descent of the cervix—a prolapse of the cervix, if you please—without necessarily any

FIG. 75.



ELONGATION OF THE SUPRA-VAGINAL CERVIX.

sinking down whatever of the fundus. Indeed, these two affections would seem to imply such a firmness in the suspensory ligaments as should, at first, keep the fundus from sinking down into the pelvis. This brings us at once upon debatable ground; but we shall prudently keep neutral, and not display our colors until the situation has been studied out. But, for the matter of that, to tell you the truth, I have hardly yet been able fully to make up my mind and range myself under any one banner. The question of hypertrophic elongation is to the gynecologist, what the late Schleswig-Holstein question was to European diplomatists. “I and another man,” said Lord Palmerston, “were the only two persons in Europe who understood this question. He is dead, and I—well, I have forgotten all I knew about it.”

The woman who has just been brought in is greatly afflicted by the disease which we are discussing. In order to spare her feelings, and to give us ample facilities for studying the condition of her reproductive organs, I have had her completely etherized. She is forty-one years old, but hardship and overwork made her look much older. Her family consists of an invalid husband and six children, all of whom she supports by taking in washing. Five of her labors presented no difficulties; but the sixth, four years ago, proved tedious from the size of the child's head, and ended with the mishap of a torn perineum. She never afterwards felt strong; had lingering lochia, more or less leucorrhœa, "bearing-down feelings," and other uterine symptoms, which she attributed to her getting up and working too soon. Three years ago her urine began to scald her. The pain, at first bearable, daily grew worse, and soon became so acute that she now empties her bladder as seldom as possible. Not long after this, a tumor began slowly to protrude more and more from the vulva. It was and still is reducible; but its reduction, which at first gave her no pain, causes her so much suffering that she has dispensed with a perineal pad, long worn to keep it within the vagina. Her condition is truly a sad one; micturition and defecation are both difficult and painful, the former exceedingly so. The urine, no longer voided in a jet, dribbles over her person and excoriates it. She straddles when walking, complains bitterly of the constant dragging weight of the tumor, and now, in the prime of life, finds herself too crippled to work; while, to add to her afflictions, both she and her eldest daughter are confirmed epileptics.

This, in brief, is the history of the case; but it leads to no diagnosis more positive than a shrewd guess. Certainty can be gained only by a careful examination of the diseased parts. As I separate the thighs, you see protruding from the vulva this large boggy tumor, shaped like a truncated cone. Its apex is evidently occupied by the vaginal portion of the cervix, which is clubbed, snout-like, and apparently much hypertrophied, but not elongated. Upon a closer inspection,

this condition of the cervix seems to be owing, not so much to a hyperplasia of its parenchyma, as to a thickening of its mucous investment, to the gaping open of a lacerated os, to the turgid papillæ of the cervical canal, and to the exuberant growth of its submucous layer. There is an eversion of the lips, and a partial rolling out, or ectropion, of the *arbor vitæ*. It constitutes, in fact, an imperfect attempt at an inversion of the glandular portion of the cervix, in which the loose mucous lining has participated to an extent greater than that of the more resisting parenchyma.

See this opening at the apex; it is not the os externum, as you may think, but a portion of the canal much higher up. Here, about an inch from it, and describing an irregular margin around it, is the os externum. Let me prove this to you. I stroke down and pull together the jagged and widely-divergent lips of the os externum, and now the cervix is somewhat elongated, reduced one-half in thickness, and made to look like a bishop's mitre. The vagina is wholly inverted; whilst partly upon it and partly upon the cervix are two large ulcers, one of them covered by a croupy exudation. These, I think, are attributable to friction from her clothing, to exposure to the air, and to the action of the dribbling urine.

Permit me to digress for a moment, in order to point out to you the difference in the behavior of true and of false mucous membrane when exposed to atmospheric action. Under such circumstances, true mucous membrane—viz., that covered by conoidal epithelium—does not materially alter in structure. For instance: the lining membrane of the bladder in exstrophy; of the rectum in prolapse; of those air-tubes, the bronchia, does not become cuticular. Look at the folds and arborescent plicæ of this everted portion of the cervical canal; they are swollen and angry-looking, but not at all changed in structure. Contrast with them the squamous epithelium which lines the vagina and covers the vaginal portion of the cervix. It has become so derm-like as to resemble the pink skin of a new-born infant. There is here no sharp margin

defining the limits of these two forms of mucous membrane, but the one shades into the other by transitional, or spheroidal, epithelium. It is this change of structure in the false mucous covering of the cervix that makes the dilating stage of labor so tedious in wombs that are or have been prolapsed. In such cases, multiple incisions of the os have often been resorted to.

To determine whether the bladder is prolapsed, or whether it enters into the tumor as one of its constituents, I shall now pass in the uterine sound. As I expose the meatus, which is much sunken, a cluster of vascular growths comes into view. These are nothing more than hypertrophied mucous papillæ, and yet they are exquisitely sensitive. Their presence explains, in part, our patient's painful micturition; for, small as they are, from the irritation excited by friction and by the passage of the urine, they give intolerable anguish. These caruncles range in size from that of a millet-seed to that of a raspberry, but the suffering caused by them bears no relation whatever to the amount of growth they have attained. Mark the unusual course which the sound takes; it passes into the bladder almost vertically, with its concavity looking downward. I can feel its tip at a point half an inch from the apex of the tumor. You can now understand why, in passing her water, our patient experiences a difficulty apart from the pain caused by the presence of the vegetations. For, since a large portion of the bladder is outside of her body, the detrusor muscles of the abdomen can no longer compress it; and, further, the urethra is curved sharply around the sub-pubic ligament, and flattened against it. Clearly then, the bladder is prolapsed, and its two walls, together with the utero-vesical fold of the peritoneum, and the inverted vagina, form the anterior half of the tumor. But what forms the posterior half? To ascertain this, I pass my index-finger into the rectum, and with my thumb push up the posterior wall of the inverted vagina. By this double touch, I learn that a small pouch of the anterior wall of the rectum (a rectocele) has been diverted into the protruded mass. This explains

her difficulty in defecation. Again; you know that Douglas's pouch is so closely fused to the posterior *cul-de-sac* of the vagina, that the descent of the latter necessarily involves that of the former. Hence we may unhesitatingly include this peritoneal fold among the constituents of the tumor.

Up to this point we have learned that the cervix uteri, the inverted vagina, a pouch of the bladder, a rectocele, and the two peritoneal folds, combine to make up this large hernial mass. This much is evident; but what is it? It is clearly not the vaginal cervix unduly elongated, because it, and only it, would compose the tumor. Can it be an inversion of the womb, or a simple descent of the womb? Or are we dealing with a hypertrophic elongation of the supra-vaginal cervix? These are questions, gentlemen, which the uterine sound will readily answer. For a distance of three and a half inches it meets with no obstruction; but now there is a hitch to its further progress. It has not, however, reached the fundus, but the bend of a retroflexion: this I know from my past experience in gauging these tumors. By a little coaxing, and by raising the handle of the sound, the tip slips onwards an inch and a half more before it fairly impinges upon the fundus. Five inches, therefore, is the length of the uterine cavity, as measured from the apparent apex, or false os, of the cervix to the fundus. But if to this the everted portion of the cervix be added—as it should be, by restoring the os externum to its proper position—the uterine cavity will, in reality, measure about six inches. The case, then, is not one of inverted uterus, else there would not be a uterine cavity. Neither is it one of simple descent, because the sound has proved not only a condition of preternatural elongation, but the fact that the fundus is high up in the pelvis. This completes our diagnosis; for, by exclusion as well as by direct evidence, it is as clear as noon that we have before us a case of so-called “*prolapse of the womb from hypertrophic elongation of the supra-vaginal portion of the cervix.*”

Every departure from health, every manifestation of disease,

is the product of a train of influences which it is the business of science to track out. Let us try to unfold their significance in this case, beset though it is with so many difficulties that I have postponed its discussion to this late period of the course, in order that all of you might be sufficiently advanced to catch the drift of argument. Four theories have been advanced,—and I now bespeak your earnest attention,—four interpretations of the phenomena, which at first blush seem hopelessly irreconcilable, and which yet have much in common. The theories are as follows:

(a) That the primary affection is a downward growth, a true hypertrophic elongation of the supra-vaginal portion of the cervix; and that the prolapse of the vagina and bladder is secondary, being the necessary result of the former. (b) That there are no changes of structure in the cervix, other than the strictly mechanical one of elongation, which is a secondary accident, consequent upon the traction exerted by a primary prolapse of the vagina and bladder. (c) Martin's*—that the circular hypertrophy of the vaginal portion of the cervix, of which the eversion of the os is the result, is a disease *sui generis*; and that it constitutes the weight which lengthens out the supra-vaginal cervix. (d) Isaac E. Taylor's†—that, contrary to the commonly accepted belief, the glandular portion of the cervix during gestation is not effaced, but hypertrophied, and that even after labor it still exists; for it has undergone nothing more than a momentary expansion of its canal for the passage of the foetus; that consequently, if the natural process of involution does not take place, the gravity of this hypertrophied cervix will aid and sustain the elongation of the non-glandular part of the supra-vaginal cervix—viz., the isthmus—which is thick, soft, and ductile, in the non-involuted womb.

Now, to my thinking, each one of these theories contains germs of truth, but no single one is of itself adequate to explain all the phenomena. For instance, granting that the

* *Boston Gynecological Journal*, 1871, pp. 230, 307.

† *Bellevue and Charity Hospital Reports*, 1869.

disease is a true hypertrophic elongation; then, according as the suspensory ligaments of the womb are more or less yielding than its vesical and vaginal attachments, one of two things ought to happen: either the cervix must grow downward, carrying along with it the bladder and vagina, or else the cervix must grow upward, lifting the body of the womb higher and higher in the cavity of the abdomen. But the upward form of displacement never happens, to my knowledge, in this affection. Again, in this affection the upper portion of the cervix is cylindrical and of uniform size, but attenuated, as if wire-drawn, rather than hypertrophied. By firmly compressing the base of the tumor, I can feel and trace high up a firm cord-like body not thicker than my little finger. That such a shape cannot be attributed to growth alone, witness the bulbous and nodulated form of the vaginal cervix in cases of chronic cervical metritis. But growth combined with traction will produce this cord-like and symmetrical form. In Oriental countries, for example, where fancy prices are paid for jasmine pipe-stems eight and ten feet in length, the wood is made straight and of uniform size throughout, by reeving a pulley and fastening one end of the cord to a growing shoot, and the other to a weight. Further, counter to the theory of growth alone is the telling fact that immediately after the knee-breast position is assumed, or after a few days of rest in bed, the uterine cavity will be found very much shortened. True hypertrophy implies a change of structure incapable of speedy resolution; even with the actual and potential cauteries, it takes months to melt down a cervix enlarged by metritis. Hence this quick reduction in length is a behavior impossible in hypertrophic elongation. Once more, the so-called supra-vaginal portion in this patient is dense and hard, whilst the infra-vaginal portion is soft and spongy, as if its substance had been absorbed. The former is stem-like, the latter clubbed. There are extremely few cases—according to Huguier and Savage there are none—in which the two kinds of hypertrophic elongation coëxist in the same cervix. The elongation is in

fact limited either to the supra- or to the infra-vaginal portion; very rarely indeed does it affect both portions of the same cervix. Such an exclusiveness does not comport with the theory of hypertrophy; for how thereby explain this lack of concord in the behavior of two portions of one continuous structure? Is it reasonable to suppose that a merely superficial muscular collar, such as the vaginal attachment, can act like a conjurer's ring, and, by a sort of magic, forbid deeply-seated tissue-changes on one side of it from passing through to the other? Rather than be embarrassed by this difficulty, I much prefer to apply the aphorism of the schoolmen—*quod non habet, dare non potest*, a cause cannot communicate what it does not itself possess—and consequently to infer that the elongation, if supra-vaginal, is not communicable, because it is not essentially hypertrophic. I say *essentially*, because I am willing to concede some degree of growth, not primary but secondary, caused by the irritation of another factor—traction—and by the stasis in the circulation induced by it.

If these arguments are sound, we must reject this theory. Nor should that of Martin's, if taken by itself, fare any better; for, if the weight caused by circular hypertrophy of the vaginal portion can lengthen out the supra-vaginal portion, why cannot the same effect be produced by the far heavier weight of a cervix elongated in its infra-vaginal portion, of a cervix greatly hypertrophied concentrically by chronic metritis, or of a large polypus or a cancer of the cervix? Dr. Isaac E. Taylor—to whom the profession is greatly indebted for first showing that the cervix uteri is not effaced either by gestation or by parturition—has advanced an ingenious theory, which hinges upon this stability of the cervix, and has the great merit of consistency. His testimony regarding the autopsic lesions of this disease shows conclusively, if I understand him correctly, that the elongation does not affect the glandular portion of the cervix, but that portion of the womb just above the os internum, at the junction of the body with the neck. In other words, it is the supra-glandular portion of the cervix—the isthmus—which is drawn out from the

corpus, and that at the expense of its thickness. Other observers have demonstrated that the glandular portion is hypertrophied circularly, not longitudinally; and this statement is further confirmed by the two important facts—first, that the os internum, so far from being separated more widely from the os externum, is, by eversion of the cervical canal, often brought nearer to it; and, secondly, that the vesico-uterine peritoneal fold, instead of receding from the end of the tumor, approaches it so closely as to run some risk in the operation for its amputation. Granting, then, these premises, I think we are logically forced to admit, in the non-involuted uterus, not only the ductility of its isthmus and corpus, but also the gravity of its hypertrophied cervix. I shall, therefore, invite you to accept Dr. Taylor's theory; not, however, as one covering the whole causation of this affection, but as one throwing additional light upon it.

Of the four theories presented to you, let us now provisionally adopt the second one—that of primary prolapse of the vagina and bladder—in order to see how far it meets the phenomena. I speak and shall speak of the conjoint prolapse of the vagina and bladder, because from the fusion of the anterior wall of the vagina to the base of the bladder, a prolapse of the one must be accompanied by that of the other; and, therefore, in the study of the mechanism of elongation, it is immaterial to us which of these organs is the first to prolapse. Should, then, the vagina and bladder prolapse, they plainly must conspire either to drag down the womb as a whole, constituting a simple prolapse, or descent of the womb; or else, in case the uterine ligaments resist this traction, to pull upon and stretch out the isthmus and lower portion of the corpus—viz., that portion of the womb with but few muscular fibres, lying between the vesico-vaginal attachment below, and the uterine ligaments—or, perhaps, pelvic adhesions—above.

Now, in fact, this very thing happens in this affection. The elongation is limited to that portion of the cervix and corpus just above the os internum, which would be dragged upon;

and does not extend to the glandular portion, which would not be dragged upon, and which, therefore, could not increase in length, save only by growth. That the healthy womb is a somewhat ductile body, capable of extension without growth or change of structure, is proved by its behavior under steady traction. Thus, when adherent to the wall of a growing ovarian cyst, it has been found by me stretched out to a length of six or more inches. I have seen the same thing happen to a womb firmly bound to the sac of a ventral foetation; and this is a happier illustration, because the womb is always so jealous of an extra-uterine pregnancy as to form a decidual membrane, and to present such characteristics of post-partum sub-involution as congestion, softening and ductility. In these cases the elongation is analogous to that predicated of a prolapse of the vagina and bladder, but in an opposite direction—from below upward—the static, or resistant, force being now in the vesico-vaginal attachments; the dynamic, or active, force in the adhesions to a growing cyst.

Thus far this theory of traction has analogy and the autopsic lesions on its side. It also has the further merit of explaining how a few days' rest will bring about so marked a diminution in the length of the womb. Thus, the recumbent posture removes the weight of the prolapsed organs, and the womb shrinks up like an over-stretched rubber band. It may, however, be reasonably objected, that since neither the weight of a very large polypus growing from the cervix, nor that of a vaginal cervix hypertrophied circularly or longitudinally, does materially lengthen out the supra-glandular cervix, it does not seem plausible that the weight of the prolapsed vagina and bladder should effect this. This objection can be met by assuming that, either through chronic congestion or through arrest of post-partum involution, the womb is thick, soft, and ductile—conditions which of themselves would tend to make the gravity of the cervix act upon the plasticity of its intermediate portion. For instance—to borrow a homely illustration from our candy-pulling days—if a rope of molasses candy be held out at arm's length, the

weight of its free extremity will draw out and thin out that portion just below the grasp of the hand. To sum up, then: the predisposition to this disease depends upon a tendency to cystocele or to vaginocoele; the receptivity, upon the co-existence of sub-involution or of its analogues.

The conjunction of the theory of *traction* with that of *ductility*—traction from the prolapsing vagina and bladder; ductility from a chronic congestion of the womb—thus offers a very reasonable explanation of the phenomena of uterine elongation. It also accounts for the eversion of the lips of the os externum, and for the circular hypertrophy of the glandular portion of the cervix. By the attenuation of the mechanically elongated part, and by the constant dragging of the vagina and bladder upon their belt of attachment, the veins of this presumed non-involuted or otherwise softened structure—and more especially the veins below the os externum—are unduly constricted, and their circulation is, therefore, rendered sluggish. Through the stasis thus induced, the whole cervix, but principally its glandular portion, gains an excess of nutrition. The papillæ and capillary loops of the arbor vitæ become turgid; the sub-mucous layer of the cervical canal grows exuberantly from within outwards, and by rolling out makes the flaccid lips of the os gape open. By the tertiary accidents of friction against the sacrum, of exposure to atmospheric action, and of irritation from the dribbling urine, the mucous coat of the cervix becomes thickened and changed in structure. Thus is brought about that circular hypertrophy which intensifies all the other symptoms.

It is a vicious circle throughout: the prolapsing organ—say the vagina—tugs at the bladder, which yields, and in turn lends its weight towards the further descent of the former; by alternately coercing and being coerced, their united action at last begets the circular hypertrophy of the cervix; the latter returns the favor by edging and nudging on the vagina, which responds by still more increasing the prolapse of the bladder and the hypertrophy of the cervix, and by aiding

them in drawing out the supra-glandular portion of the cervix. Thus this reciprocation is kept up until the constantly elongating and growing cervix has attained length and weight enough to act aggressively. Aided now by the downward succussions communicated to it by the movements of the body, it completes the work by wholly inverting the vagina. The resistance of the vaginal tube to this final extrusion, being spent upon its cervical attachment, pulls the already gaping lips of the os still more apart, makes the cervical canal funnel-shaped, and sometimes everts it so completely as almost to convert the internal os into an external one.

From this point of view, the condition of the cervix in any given case of prolapse determines the nature of the disturbing cause. If the uterine cavity is barely or not at all lengthened out, as in the simple descent of the womb, we may infer that the prolapse of the womb has been the initial event. If, however, marked elongation of the cervix is present, then the vagina and bladder have been the primarily prolapsed organs. Thus defined, the latter affection is essentially a prolapse of the vagina and bladder, and not of the womb; whereas the former is as essentially a prolapse of the womb. I beg you, however, not to regard this interpretation as final or authoritative. Pressed to the quick it may show flaws, and I therefore invite you to accept it simply as one more flexible than any other yet advanced. The truth is perhaps not yet reached, for nature transgresses by anonymous agents, whose ways are often past finding out.

We must now put our theories to the test, in order to see whether they can be clinically sustained. Like our former patient, this one has also reached that period of life when senile atrophy of the reproductive organs begins to take place. The vagina, having lost its pelvic packing of fat, tends to sag down. This tendency is urged on by her occupation as a laundress, which compels the erect posture and much lifting of heavy weights. In one of her numerous confinements the perineum sustained injury. The rent has not

only deprived the vagina of its chief abutment, but has also straightened out and shortened its natural curve, making its axis coincide very nearly with that of the superior strait. The anterior wall of the vagina, being now unsupported, began to bulge downward. During gestation the vagina and the womb become hypertrophied, and after labor undergo the same process of involution. After the birth of her last child this process was arrested, and these organs remained hypertrophied and with impaired tonicity on account of the laceration of the cervix and of the perineum. Such a condition would of itself tend to promote a descent of the vagina; for, indeed, in the last months of gestation, a prolapse of its anterior wall is by no means an uncommon event. Again, the vascular growths at the meatus urethræ gave so much anguish that she schooled herself into the habit of holding her water as long as possible, and consequently—for the latter act implies the performance of the former—of putting off the evacuation of her bowels. Of course, then, the over-distended bladder and the overloaded rectum, by pouching in the vagina posteriorly and anteriorly, would materially aid in the dragging down of this already prolapsing canal.

From the first, her bladder has kept pace with the vagina in its descent, until its base is now far below the level of its neck, and the pouch thus formed cannot be wholly emptied. In many cases, from the decomposition of the residual urine, cystitis is set up; even calculi are sometimes formed. Occasionally the neck of the pouch gets tightly jammed under the pubic arch; then the orifices of the ureters may become so obstructed as to bring about a dilatation of the ureters or a hydronephrosis. Fortunately, not one of these accidents has happened to this woman, but, of course, the gravity of the urine contained in this pouch has helped to pull down more of the bladder, and still more of the vagina as well; for these arch-conspirators abet one another. The changes previously detailed have all along been taking place in the intermediate part of her womb, and in the glandular portion of her cervix. until you now see how long and stem-like the former has

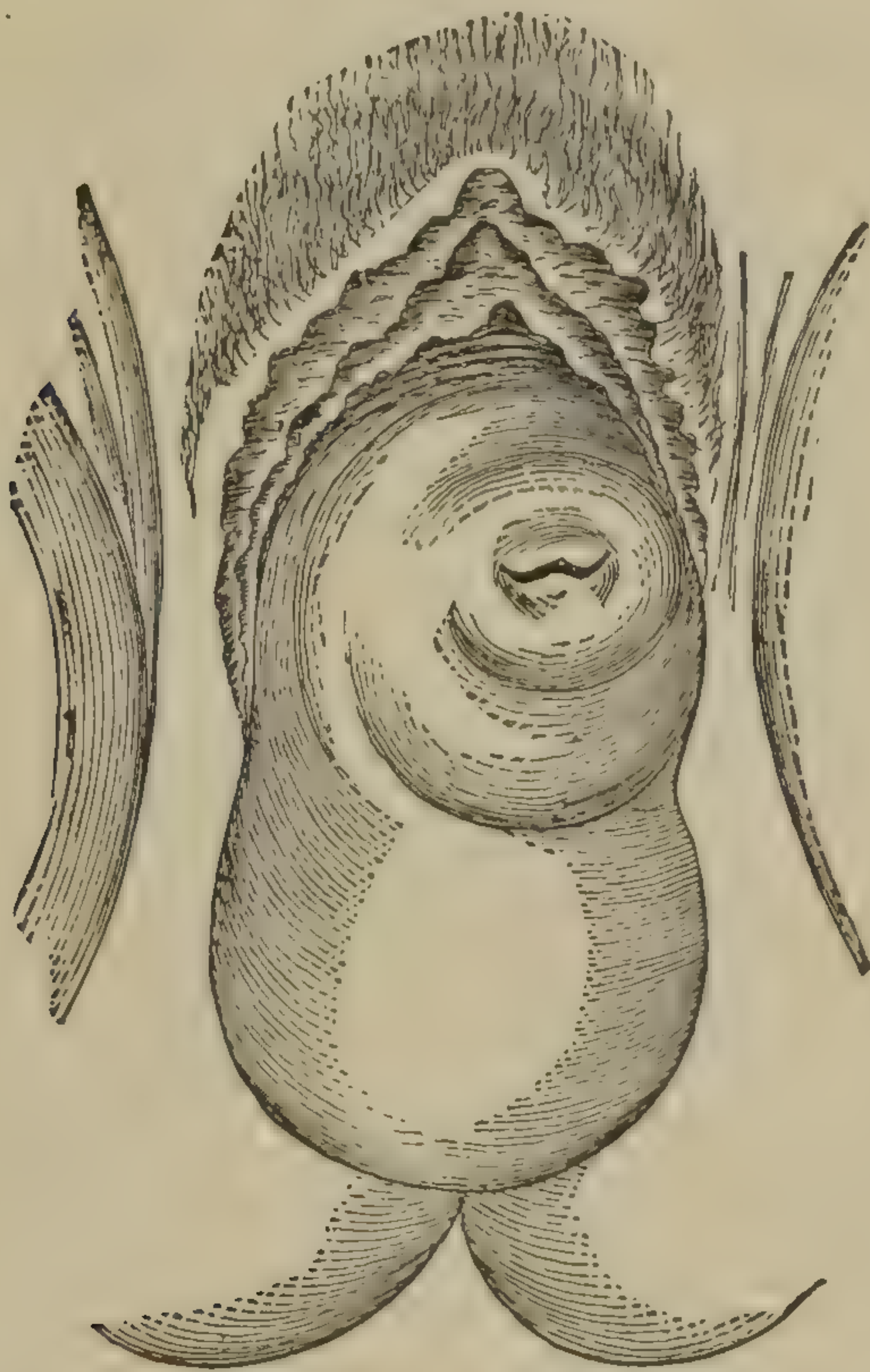
become, and how much the latter has come to look like the snout of a pig. This resemblance is heightened by the ununited transverse fissure of the cervix, resulting from one of her labors, which exaggerates the eversion of the os.

I told you that the final weight and length of the cervix, aided by the jars of the body, completely invert the vagina, which then pulls the gaping lips of the os widely open. Here are my vouchers: As I push the tumor back into the vagina, the eversion becomes less and less; and now, as I force it out by supra-pubic pressure, the eversion is exactly proportioned to the extent of extrusion. Again, the gravity and the prolongation of the cervix, aided by the final descent of the womb as a whole, have smoothed out the rugæ of the posterior vaginal wall into mere water-lines. This could not happen from the weight of the vagina alone; nor, in my experience, does it happen in the simple prolapse of the womb, however complete it may be. Finally, this mechanism of descent explains a remarkable uniformity in the length of the uterus in all those cases of elongation in which the womb itself partly descends and the cervix appears outside of the body. Then usually the sound indicates a length of five inches or thereabouts—a limit attributable to the resistance to any further elongation and descent by the anterior wall of the vagina, which measures about two and a half inches in length. This great length of the uterus, by the way, furnishes a good reason for the pain felt by our patient when she returns the tumor. For, since the fundus is not very much below its proper position, the return of the tumor—necessarily involving that of the cervix—can be affected only at the expense of either an undue stretching upwards of the suspensory ligaments of the womb, or of a forcible bending, or retroflexion, of the elongated cervix.

You must not, however, infer that in all cases of this affection the fundus will be found so high up in the pelvis as it is in our patient. On the contrary, in the majority of old cases you will find it very much lower down than it would be in health. Occasionally you will meet with a case in which the

elongated and heavy womb has finally overcome the resistance of its ligaments. It will then be found in a state of retroflexion, wholly outside of the body and contained in the vaginal sac. By palpation and the uterine sound, such a complete prolapse is easy recognizable. Even to the eye there are presented certain unmistakable marks. For the tumor is then of a large size, and, as you will be able to understand from this figure (Fig. 76), the bulge of the retroflexed fundus

FIG. 76.



COMPLETE PROLAPSE OF THE WOMB. (FROM TAYLOR.)

makes the posterior vaginal wall hang down below the snout-shaped apex like a dewlap. Nor, on the other hand, is it rare to see cases in which the fundus has apparently not budged from its normal site.

This affection of the cervix is restricted as a rule to the laboring classes, and especially to those women, such as cooks and laundresses, whose work compels them to stand much on their feet and to lift heavy weights at a disadvantage. It and

a host of other uterine disorders have very lately been attributed to an alleged excitation, provoked by the treadle motion of the sewing machine. I do not believe this; to the pure all things are pure, whilst even in the impure the wearisome movements of a laborious trade could hardly awaken, much less content, any sexual solicitation. True, professional operators on the sewing-machine are liable to uterine disorders, but, as a class, so are all seamstresses. Their susceptibility is not, however, traceable to a prurient source, but to the combined effects of bad air, bad food, over-work, close confinement, the sitting posture, and of such accessories as tend directly or indirectly to determine pelvic or portal congestions. Nor do I believe that self-abuse in the single, and perverted sexual relations in the married, tend to produce this lesion. On the contrary, an ample experience would lead me to the opinion, that this affection is eminently peculiar to hard-working women who have borne many children, and who have had a tear of the cervix. I have seen this kind of prolapse but twice in virgins, and they were old maids. The cervix in each looked like the male organ in a state of erection.

Granting, then, that this elongation arises in the main from traction, and not primarily from any constructive energy inherent in the cervix; what are our resources for its cure? Could I put this woman to bed for a few weeks, and thus relieve the cervix from its own dead weight and from that of the vagina and bladder, it would shrink back very materially, but not to the standard length of the healthy womb. It would act, as I have before said, precisely like an over-stretched rubber band. I might then adjust some suitable pessary, which would keep the prolapsing organs in their proper positions. Unfortunately, the poverty of this class of patients renders such a treatment inadmissible. At best, the womb is too ductile, the vagina and perineum too lax, even when contracted by appropriate operations, to render this treatment other than tedious and unsatisfactory.

The desideratum here is something that can furnish a support to the unstable pelvic organs, and, at the same time, con-

solidate the ductile womb by giving a fillip to the now dormant process of involution. The womb may sometimes, in cases of no great hypertrophy, be reduced in size by merely restoring the cervix, which is usually lacerated. But this operation is not to be depended upon, and the indications are, in my experience, best met by the amputation of the vaginal portion of the cervix, and by the restoration of the perineum whenever torn or functionally impaired. From a misconception of the nature of this disorder, Huguier recommends an unnecessarily severe and dangerous operation, by which the whole vaginal portion is removed, and with it a conical core of the supra-vaginal portion. You will naturally ask, "How can the removal of an infra-vaginal slice cure a supra-glandular elongation measuring three or four inches?" I shall reply, first, by two illustrations: After the ablation of a uterine polypus, its pedicle, however long and broad, will disappear; again, an elongation of the uvula is curable by snipping off merely its tip. In the second place, the hemorrhage during the operation, by depleting the womb, causes shrinkage; the rest in bed furthers this contraction; whilst the prolonged suppuration necessary for the repair of the wound, sets up so alterative an action as will carry out the process of shortening, and finally consolidate the whole uterine body. Once more, this operation lessens the weight of the cervix, and establishes a retrogressive metamorphosis of the sub-involuted vagina and of its thickened mucous investment, giving thereby tonicity and stability to those parts.

One danger attaching to this operation is that of hemorrhage, but with care this can be avoided. Such accidents as cellulitis, peritonitis, tetanus, and septicæmia, will occasionally happen, but not with a frequency greater than in any other surgical operations upon the cervix. To avoid the loss of blood, and to obtain a deeply granulating wound, the amputation is usually made with the chain- or the wire-*écraseur*, or by the galvano-caustic loop. But, whatever the instrument, the operation is always attended with the risk of invading the bladder, and especially the retro-uterine pouch.

Hence, I should strongly advise, whenever you can closely watch your patient, to use the knife or the scissors. For, thereby, not only can you remove with greater safety a larger slice of the cervix, but also can, in case of this accident, bring together, by metallic sutures, the cleanly-cut edges of the vesical or the peritoneal wound; whereas no union would be likely to take place were the edges crushed by the *écraseur* or seared by the galvano-cautery. This mishap has happened to the most skilful operators; but, if every case has been reported, no great fatality attends it. Whenever amputation with a cutting instrument is resorted to, it will be safer first to transfix the cervix, as high up as prudent, with a long straight skewer; then to place above this, as a tourniquet, the loop of an *écraseur* or a noose of rubber tubing, and, finally, to slice off all that portion of the cervix on its distal side, making the incision between it and the needle. You will then close the wound with deep stitches by Hegar's operation (Figs. 72 and 74).

I have described this operation somewhat fully, because, although it offers several advantages, I shall not perform it this morning, but shall use the wire-*écraseur*. My reason for this is, that I have repeatedly amputated the cervix before you with the knife, and I wish now to show you how it is done with the cold wire, which you will be more likely to use in country practice, because the cutting operation is liable to be followed by a secondary hemorrhage. After placing our patient in the lithotomy position, I first catch up with the forceps the cluster of vegetations dangling from the meatus of the urethra, and snip off its base with the scissors. To prevent its otherwise sure return, I sear the raw surface with Paquelin's cautery. I next draw off the urine, and at the same time measure, with the catheter, the depth of the vesical pouch, and also sound the bladder for stone. In order to make myself easy on the score of wounding the bladder, I shall explore that organ with my finger. By gently opening the blades of a uterine dilator in the urethra, I have, in a few minutes' time, so dilated this short and elas-

tic canal that it will now permit me to coax in my little finger. Note how low its tip reaches—certainly not more than half an inch from the apex of the everted cervix. So far, good! We have accurately defined the lower boundary-line of the bladder; but very unfortunately there are no diagnostic criteria for ascertaining the depth of the retro-uterine fold. Usually, this fold does not descend so low as the pouch of the bladder; but this rule is not invariable, and the peritoneal cavity will occasionally be opened in spite of the greatest care. Some years ago while amputating, with the hot wire, the cervix of a very delicate lady, I burnt in this peritoneal fold a hole large enough to admit a silver quarter. No other bad symptoms arose than a slight febrile movement, which lasted two days. Guided by the tip of my little finger inside of the bladder, I now transfix the cervix antero-posteriorly by a sharply pointed skewer, entering it just below the lower margin of the bladder, and slanting it upward and backward so that its point may emerge somewhat higher up on the opposite side. The bladder is, therefore, safe, whilst the pouch of the rectum is so small, and so far from the course of the skewer as also to be out of harm's way. Could this be affirmed as positively of the peritoneal fold, the operation of itself would be performed without any misgivings; but, with regard to that, much must be left to chance. It remains now to cut, with the scissors, a shallow groove around the cervix close to the distal side of the skewer, and to lodge in it the wire loop of the *écraseur*. I give a few turns of the screw; and now see how bloodlessly the whole vaginal portion of the cervix has been amputated.

Some of you may perhaps wonder why the *écraseur* was not used without the skewer. There is a good reason for this: Whenever the wire or the chain of an *écraseur* begins to bite into living flesh, it tends not only to slip in the direction of least resistance, but also to drag into its loop the more relaxed tissues of that side. Now, since the vaginal portion of the cervix is clubbed and tuberos, the direction of least resistance and the looser tissues lie above the surgical neck. Hence,

unless guarded by the skewer, the loop might slip upwards and pinch off a piece of the bladder or of the peritoneum. Sometimes, instead of using the skewer, I cut merely a groove through the tough mucous coat of the cervix, and lodge the wire in it. This is the best plan whenever the tissues are redundant and there is plenty of room, because the wire then cuts more cleanly, and is not so liable to snap.

I shall now slide over the wound the adjacent mucous membrane, and unite it to the os uteri by Hegar's radiating stitches. More or less union will then take place, and the healing process will be hastened. This cannot be done when the hot wire is used, because the mucous membrane is then sealed to the tissues beneath, and I, therefore, never use it now.

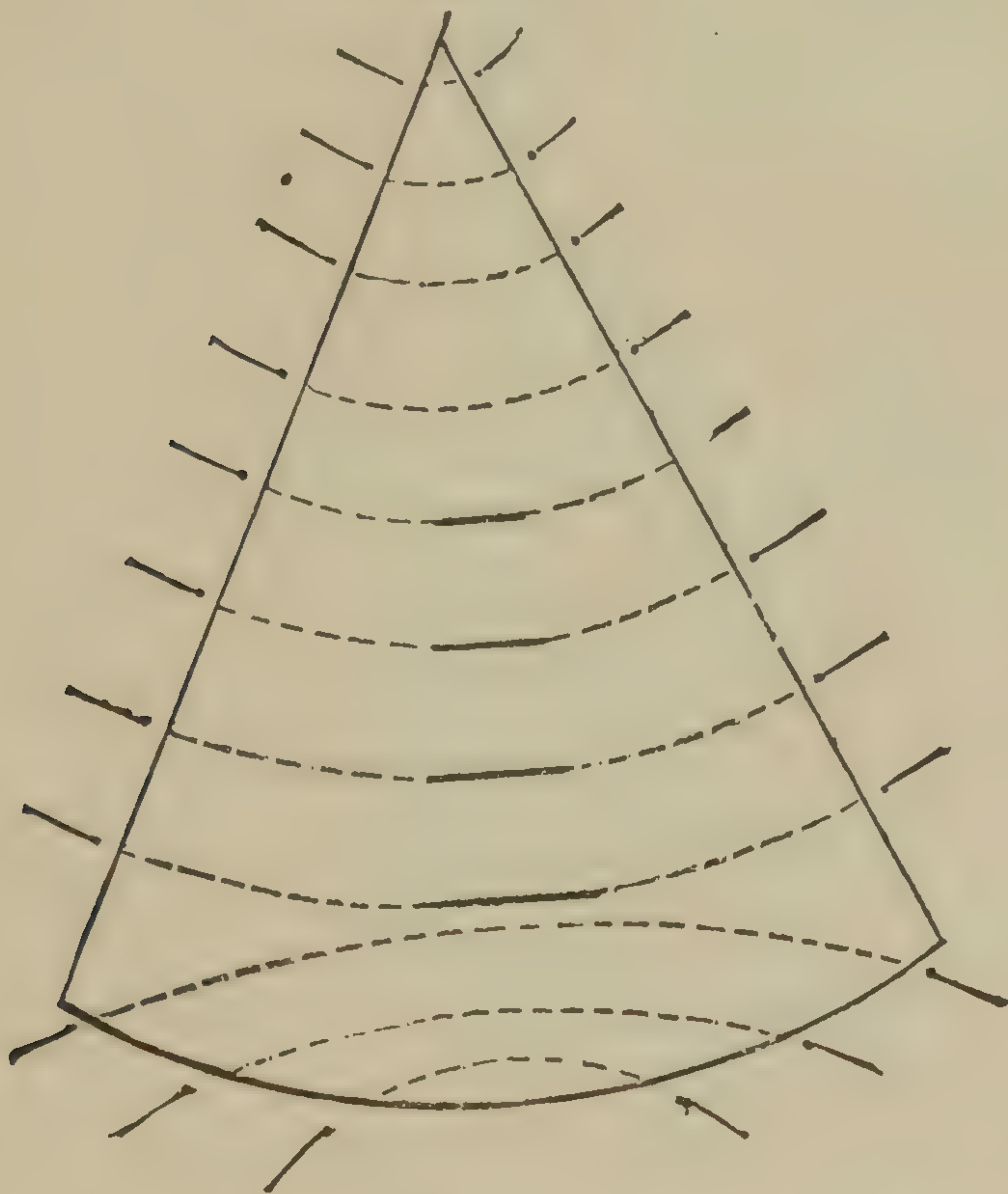
Our patient will now be put to bed, where she must stay for at least two weeks. Should secondary hemorrhage take place—which is improbable—I shall be forced either to inject hot water, or to plug up the vagina. As soon as pus begins to form, the vagina will be washed out several times a day with carbolated or sublimated injections. If left to itself, the wound will not cicatrize under four weeks; but the healing process can be hastened by an occasional touch with the nitrate of silver.

This operation will result in our patient's cure, so far as the elongation of the cervix is concerned,—that is to say, after the lapse of five or six weeks her uterine cavity will not measure over three inches in length. But it may not prevent more or less prolapse of the relaxed vagina and bladder, and another operation will then be needed to repair the torn perineum. Some surgeons advise in every case an operation either for contracting the vaginal canal or for narrowing its outlet; but this is not always needful. Whenever the fundus has barely sunk, I believe that, whatever the degree of cervical elongation, the removal of the vaginal portion will alone effect a cure in the majority of cases. For the same stays which have hitherto sustained the fundus will afterwards, through the medium of the now contracted and consolidated

cervix, sustain also the vagina and bladder. On the other hand, whenever the fundus is found to be displaced to any marked degree, then, in addition to the amputation of the cervix, it will be necessary to lengthen the perineum, and at the same time narrow the outlet by the operation of episio-perineorrhaphy.

In repeated operations under such circumstances, I have met with but a single failure. But, when the hypertrophied womb is wholly extruded, as in Fig. 76, the issue is not so happy a one. Gynecologists have in vain racked their brains

FIG. 77.



TRIANGULAR DISSECTION OF THE VAGINA, WITH THE MANNER OF INTRODUCING THE SUTURES. (FROM HEGAR.)

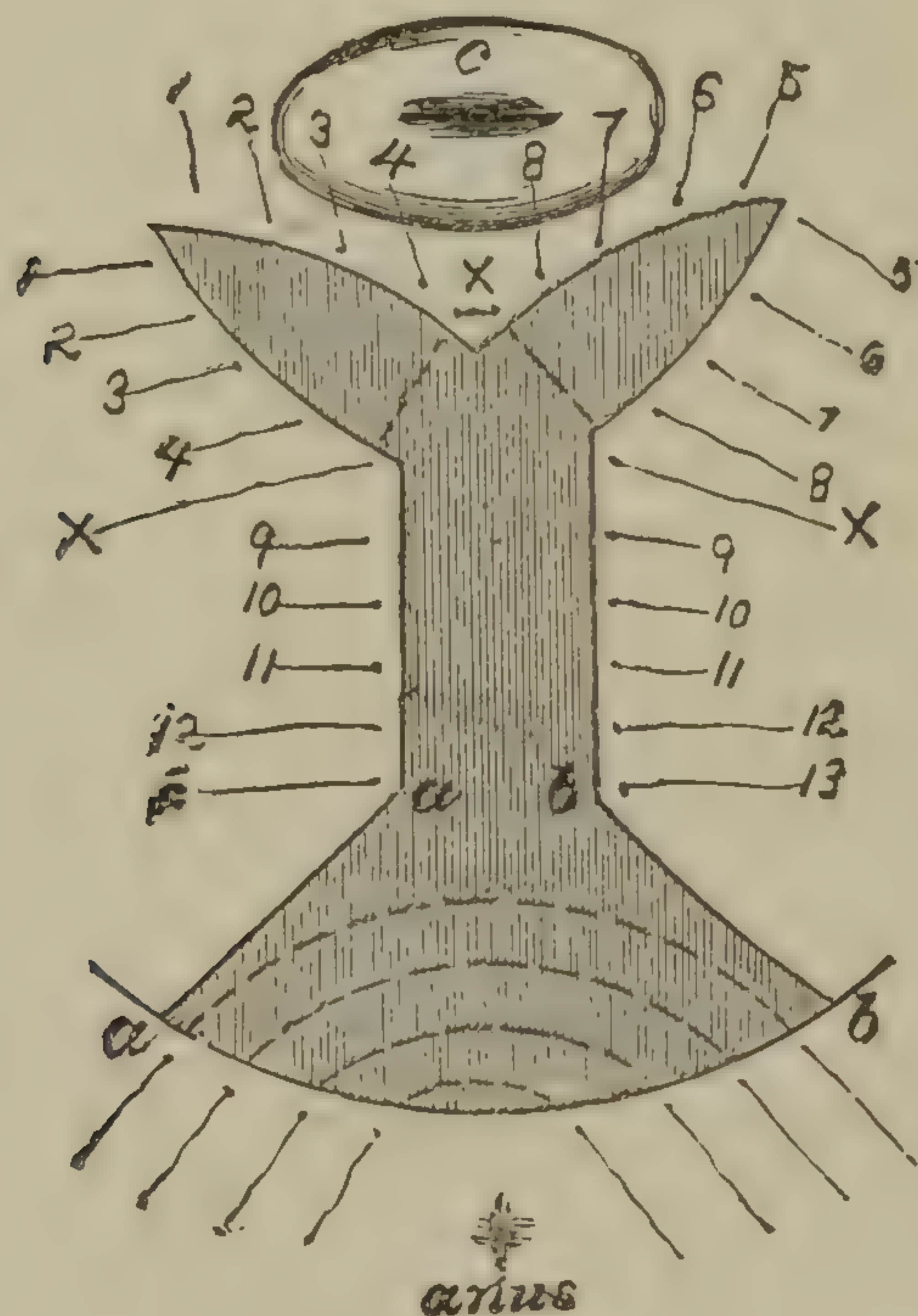
to devise some permanently successful operation. I have best succeeded by first taking off a slice of the cervix so as to bring about involution, then, following Hegar's plan, by narrowing the vagina by the removal of a V-shaped piece of mucous membrane from the posterior vaginal wall. The

apex should start from near the cervix, and the base should end at the vulva, which it includes, as in the operation for ruptured perineum. As you can see from this diagram (Fig. 77), the four upper and the three lower stitches are buried in the tissues by one sweep of the needle; but the intermediate ones emerge in the middle line of the wound, so as partly to cross it. This operation narrows the vagina, makes a firm floor to the pelvis, and leaves a rod of cicatricial tissue, which splints up the posterior vaginal wall.

Dr. Reamy has devised a very ingenious operation for the relief of prolapse of the womb, when surgical interference is needed. The description of it I shall give in his own words:*

"Fig. 78 represents the shape of the denuded surface on the

FIG. 78.



posterior vaginal wall. The arms at the upper part extend well up to the sides of the cervix in the lateral culs-de-sac of the vagina. These are denuded as deeply as is possible without entering the peritoneal cavity just below and behind the

* *Medical News*, April 9, 1887, p. 396.

cervix, and without interfering with the ureters at the upper lateral extremities.

“It is very important that this denudation be deep, since, in the first place, it will give greater supporting strength by the thickness of the line of union obtained, and, in the second place, a deep denudation of these lateral arms will unite the vaginal walls more intimately with the underlying fascia. This increases the supporting power of this fascia to the vaginal culs-de-sac, and thus to the uterus, by giving it a ‘shorter hold’ to the vaginal walls, if you will permit the expression.

“The width of the denudation upon the posterior wall depends upon the amount of vaginal constriction required. You must be governed in the amount of divergence between the lines *aa* and *bb* by the extent of perineal injury. The greater the injury the wider the divergence.

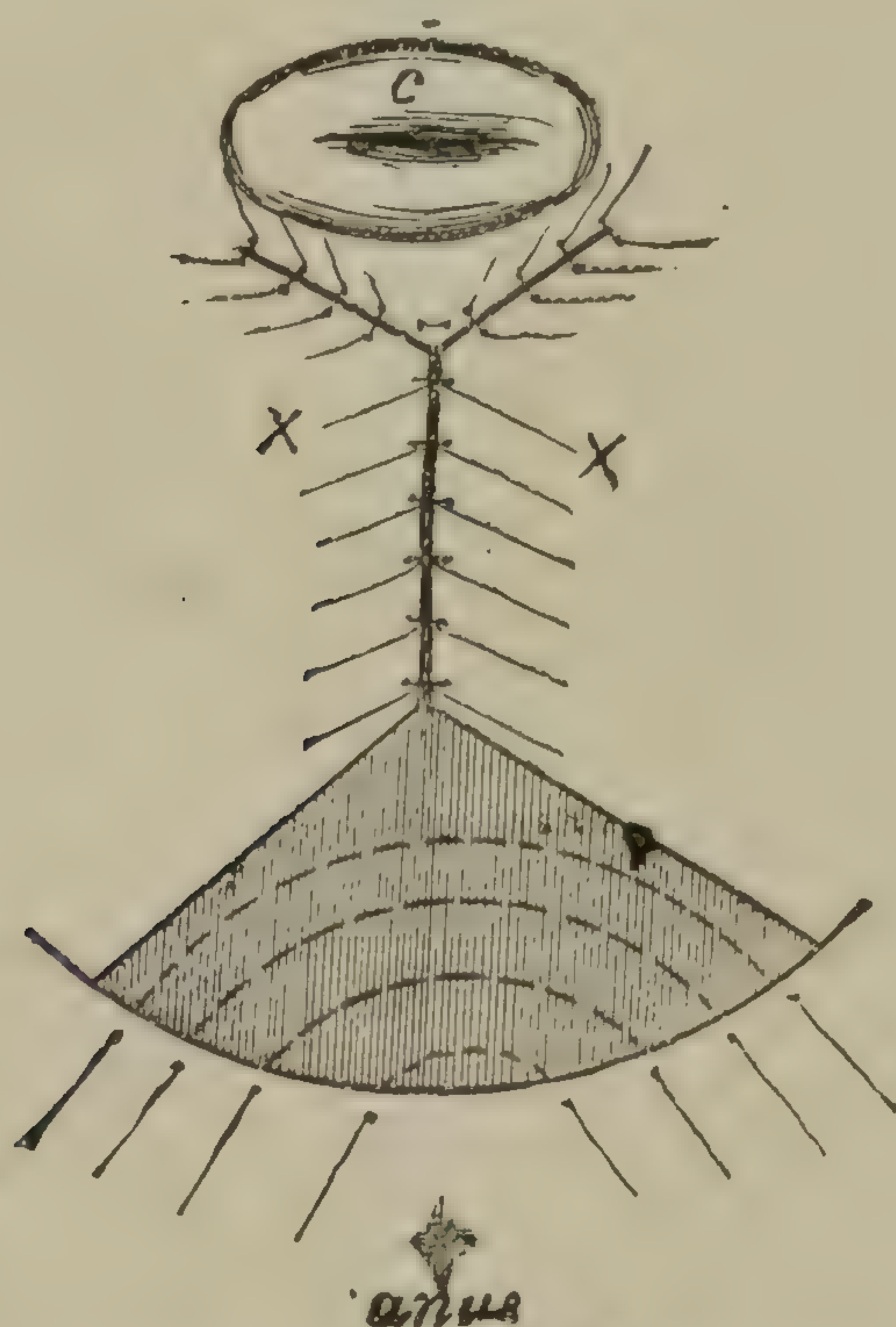
“If there should be no laceration of the integumentary perineum, these lines should converge to a point on the posterior vaginal wall at or just behind the fourchette. I use catgut for the sutures inside the vagina, those numbered in the figure 1 to 13 inclusive, and also for the sutures marked \times , because of the difficulty in removing either silk or wire over the freshly united perineum.* These should all be tied before the perineal sutures are introduced, indeed, it is best to secure them before the perineal denudation is made.

“The suture marked \times is of great importance, and I wish to call special attention to it. It should be introduced about one-quarter of an inch from the border of the denudation in the angle made between the denuded tract on the posterior wall and one of the denuded arms. From this point it is carried across the denudation in the direction indicated by the

* The great objection to catgut, heretofore, has been the danger of its speedy absorption before union had occurred, but this difficulty has been surmounted by the method of Veit, of Berlin. He places the gut in pure oil of juniper wood for twenty-four to forty-eight hours, and then preserves it in a mixture of pure alcohol and glycerine, ten per cent. of the latter, till used. Water should never touch the gut. In this way it lasts in the tissues for ten or twelve days. See letter by Paul F. Mundé, *Amer. Journ. Obst.* page 914, 1886.

dotted line and brought out in the undenuded apex between the two arms behind the cervix, it is then reintroduced in this apex about one-quarter of an inch from its point of emergence, and carried across the other denuded arm in the direction of the other dotted line, and brought out at a point in the opposite angle between the lateral arm and the posterior tract corresponding to the point of entrance. In tying this suture across the upper part of the posterior denuded tract the three angles are brought together.

FIG. 79.



“Fig. 79 shows the field of operation after all the vaginal sutures are tied. For the perineum, silver wire is used in the usual way, as shown here in the diagram; but the upper sutures should be carried across high up, about on a level with the lowest suture inside the vagina, so as to secure perfect coaptation of the line *aa* to the line *bb*.

“Finally, as to our patient, sexual intercourse must be forbidden for three months after the sutures are removed. During this time she must not do hard work, but must spend

part of each day on the couch. These precautions are necessary in order that the modified vagina may become firm, and that the uterus in its restored position may undergo involution. For, unless the weight of the uterus be reduced, it is only a question of time when prolapse will again occur, no matter what operation has been done upon the vagina."

LESSON XIX.

SHORTENING OF THE ROUND LIGAMENTS.

FOR obstinate cases of simple prolapse of the womb, and of hypertrophic elongation of the supra-vaginal portion of the cervix—cases which have resisted the foregoing treatment—it seems to me that “Alexander’s Operation,” or shortening of the round ligaments, is peculiarly applicable. For it stands to reason that if, in simple prolapse, the womb can be lifted well up and anteverted, as it ought to be by shortening of the round ligaments, it will escape the downward pressure of the movable abdominal organs. Again, if, in hypertrophic elongation of the supra-vaginal portion of the cervix, the prolapse persists after the womb has become condensed or involuted by the amputation of its cervix, it falls into the category of simple prolapse, and should be treated accordingly.

For this operation we are indebted to Dr. William Alexander, of Liverpool, England, and from his paper,* and from others† on the subject, I shall give you a condensed description of its performance.

The patient is to be prepared as for an ovariectomy, and operated on with every antiseptic precaution. The bowels are cleared out by a cathartic on the day preceding that of the operation, and by an enema on the following morning. She takes a soap bath and washes herself as clean as possible. After etherization, the pubic hair is shaved off, and the abdomen, vulva and thighs are again thoroughly cleansed with soap, and wetted with a 1:1000 solution of corrosive sublimate; with this solution the vagina is also washed out.

* *British Gynæcological Society*, November, 1885, p. 246.

† Dr. W. M. Polk: *The Medical Record*, July 3, 1886, p. 1.

From the pubic spine an incision is made upward and outward in the direction of the inguinal canal—viz., parallel to Poupart's ligament—and from two to three inches in length, according to the amount of subcutaneous fat. This fat is cut through by subsequent incisions until the spine of the pubes is reached, and the pearly glistening tendon of the external oblique appears at the bottom of the wound. Sometimes, half way through the layer of fat, an aponeurosis is met with, which is liable to be mistaken for this tendon; but it is not so clear and shining. A finger placed on the pubic spine and made to slide upward and outward, about half an inch away, will feel the depression or the lessened resistance of the external inguinal ring. The crossing fibres of the inter-columnar fascia will also be seen. The landmarks are Poupart's ligament below, the inter-columnar fibres running across, and the pubic spine at the inner side. When in doubt as to the position of the ring, the operator can drag the wound over a large area by means of retractors, and search the region thus exposed. The inter-columnar fascia will now be seen bulging, and when it is cut through, a nerve, some vessels, fat, some tendinous bands, and sometimes the pale-red round ligament, spring out of the canal, and rise and fall with every respiratory movement. In corpulent women, fat alone projects and conceals everything else. In such a case, the mass of fat, with its contained structures, is seized and gently drawn to the upper end of the wound. At the lower end, the round ligament will now be readily recognized by its flesh-colored fibres and delicate structure. Along its anterior surface and close to it will also be seen the white and easily-distinguished genital branch of the genito-crural nerve. Should the operator be in doubt whether it be the round ligament, he must open up on a director the inguinal canal a little more. Should he have mistaken a portion of the tendon of the muscles for the round ligament, he will find that traction on it will make the tendon feel like a taut line, or ridge, extending outward above Poupart's ligament. Traction on the round ligament, which lies in the canal, cannot, of course,

make such a ridge. Bands of fascia, and especially fasciculi of the internal oblique muscle, must not be mistaken for the round ligament. They are brittle, breaking on slight traction, and cannot be pulled out.

When the ligament has been recognized, the nerve on its surface must be cut through, and the ligament itself seized by the fingers or by broad and blunt forceps. While gentle traction is made on it, bands, uniting it to the neighboring structures, will come into view. These must be cut through with scissors, care being taken not to nick the ligament. Freed from these adhesions, it can be drawn out without any resistance, giving the impression sometimes as if it were broken off from its uterine attachment. A sponge is laid over the wound, and the operator and his assistant change sides so that the former shall always stand on that side of the patient opposite to the one on which he is operating. By so doing he can look directly into the inguinal canal, and better draw the ligament towards himself. The other external ring being cut down upon and its ligament isolated in the same way, the next stage is the replacement of the womb.

This is done by placing in position with a sound the prolapsed or the retroverted or the retroflexed womb. While the sound is held by a third assistant, the ligaments are pulled out simultaneously until they are felt to control the new position of the womb—that is to say, until the slack is drawn out and the sound is moved by their traction. In prolapse the womb should be raised up on the tip of the sound as high up and as forward as possible. They are now held by the first assistant, while the operator, with a curved needle threaded with cat-gut or with fine silk, stitches each to both pillars of the ring by two sutures to one pillar and two to the other, viz., by four sutures to each round ligament. This secures the closure of the external abdominal ring, and the fixation of the ligament, without injuriously strangling the latter structure between them. Or the operator may attach the ligaments to the anterior face of the pubic bone by three sutures. But he must then stitch the pillars together, if the ring gapes or the

canal has been opened. The loose loop of each round ligament is now cut off, and the stump stitched into the wound by means of the sutures that close the incision. If the layer of fat is a thick one, or there has been disturbance of the parts through searching for the ligaments, a fine drainage tube of bone or of soft rubber should be inserted, which may be removed on the second or the third day. Otherwise, as in ovariectomy, deep sutures alone will suffice. The wound is dressed as in ovariectomy, with some antiseptic gauze. To support the womb and to lessen the strain on the round ligaments, the vagina, for two or three days, should be lightly packed with a cylindrical tampon of iodoform gauze. The patient is kept in bed for at least three weeks, and coition should not be indulged in for some time longer.

Alexander dispenses with the vaginal tampon, but he always inserts a Hodge pessary, and also, in retroflexions, a galvanic stem-pessary. Polk does neither, relying on the tampon and on rest in bed for a month, and he claims as good results as those of Alexander. While all operators do not agree with regard to the ease of discovering the round ligaments and of isolating them, they concur in deeming the operation a very safe and successful one.

LESSON XX.

PERI-UTERINE INFLAMMATION.

GENTLEMEN: I come now to a subject of infinite importance, but one of obscurity so far as its pathology is concerned. This subject is that of inflammation of the serous and the areolar tissues surrounding, enveloping, supporting and padding the womb and its appendages. When the areolar tissue is the one supposed to be involved, the inflammation has been called Pelvic Cellulitis, or *parametritis*; when the inflammation is limited to the serous tissue, it is termed Pelvic Peritonitis, or *perimetritis*.

Pathology.—The questions yet unsettled about these forms of inflammation are: (a) Which tissue is the one more frequently involved? and how involved? (b) Can inflammation of the one tissue exist without implicating the other? (c) What are the channels of infection?

With regard to the first question—viz.: Which tissue is the one more frequently involved?—one would suppose *a priori* that there could be no difficulty whatever in the way of a positive answer. Yet this is not so; for while eminent gynecologists, especially the older ones, hold that the areolar tissue is the one more frequently attacked, and that the inflammation is essentially a cellulitis, or phlegmon, a brilliant group of younger investigators contend that “cellulitis must be dethroned from the prominent position it has held in uterine pathology,”* and that pelvic inflammation is essentially one of the serous tissue, or peritoneum, and that the lesions in the order of their sequence are “salpingitis and peri-salpingitis, öophoritis and peri-öophoritis, lymphadenitis and peritonitic bands and adhesions.”

*J. R. Goffe, *New York Medical Journal*, October 9, 1886, p. 399.

With regard to the second question, whether inflammation of the one tissue can exist without implicating the other? it seems very unlikely that either one of two contiguous tissues can be inflamed without affecting the other. Autopsies very generally reveal such a transmission, although there is but little question that one tissue—and that one the peritoneum, as the new school teaches—bears the brunt of the inflammation. Some, however, assert that a perimetritis, or peritonitis, is often found unassociated with any inflammation of the connective tissue, but that a parametritis, or cellulitis, generally affects the pelvic peritoneum on the affected side.* Fortunately these doubts about the pathology do not conflict with the treatment.

The third question—What are the channels of infection? now remains for our consideration. Here, gynecologists are again at sea. Of course the womb and the vagina are the open gateways through which the disease first enters. No one disputes this; but, once the poison gains a foothold, how does it travel on and gain access to the serous and the connective tissues? Does it go directly and first to the peritoneum through one of the oviducts as a salpingitis? Does it invade both tissues by the more round-about way of the veins, as a phlebitis? or of the lymphatics, as a lymphangitis? Or again, does it make a short cut to both tissues by direct transmission through the wall of the womb? In puerperal septicæmia it is probable that the poison enters the pelvis through all these channels, for endometritis, metritis, phlebitis, lymphangitis then co-exist. But in non-puerperal septic infection—such as that from gonorrhœa, or that arising from gynecological operations—it is more likely that the inflammation, following the usual course of inflammation—that of continuity of structure—travels up the mucous membrane of the endometrium, and enters the peritoneal cavity through the oviducts.† In other words, the inflammation first appears as an endometritis, next as a salpingitis, then as a peri-

* H. R. Bigelow, *American Journal of Obstetrics*, December, 1886, p. 1254.

† W. M. Polk, *The Medical Record*, September 18, 1886, p. 310.

ovaritis, and finally as a peritonitis—either diffused or localized—cellulitis being a secondary product and coming from contiguity of structure.

In support of these views Coe, the conscientious pathologist of the Woman's Hospital of New York, states* that "Of half a dozen fatal cases of hysterio-trachelorrhaphy and incision of the neck, in which I enjoyed the rare opportunity of studying carefully the sequences, what was the cause of death? In every instance it was *acute diffuse peritonitis*. The inflammation could be traced straight up from the wound along the mucous membrane of the uterus as an endometritis, along the tubes as a pyo-salpinx, and thence to the peritoneal cavity. In none of these cases was there any evidence of acute cellulitis, although old cicatrices were not wanting."

Welch, who has had exceptional opportunities for making autopsies of women who have died from supposed cellulitis, writes: "I do not wish to be understood as altogether denying the occurrence of inflammatory exudation primarily into the pelvic connective tissue; I do, however, believe that the frequency of such primary exudations is greatly exaggerated, and it certainly has been my experience to find that the vast majority of cases which have been diagnosticated before death as cases of para-metritis, or pelvic cellulitis, have proved, if they came to autopsy, to be cases of circumscribed exudations into the pelvic peritoneal cavity (pelvic peritonitis). I am led to believe that the various hardenings and tumefactions, which, when felt near the uterus, are often considered evidences of pelvic cellulitis, acute or chronic, are in most cases due to acute or chronic pelvic peritonitis."†

It also appears that the tumors, or masses, produced by these inflammations, are not found in the connective tissue, but are made up of ovary, oviduct and exudates. Sometimes, as I have seen, a knuckle of intestine, or even the omentum, is included in them. In the discussion following the reading of Dr. Coe's paper, Wylie asserted, from a large

* *New York Medical Journal*, May 15, 1886.

† *New York Medical Journal*, Oct. 9, 1886, p. 399.

clinical experience, that "Most of the limited inflammations of the pelvic peritoneum occurred in the posterior folds of the broad ligaments, the resulting adhesions tending to draw the tubes and ovaries down below the level of the cervix uteri. The indurations, which used to be called cellulitis, were really such prolapsed tubes and ovaries, surrounded by adhesions." Again, Aran, a French writer, states that, "In the centre of the (exudation) tumor we find one or both appendages of the uterus—viz., ovary and tube."* Goffe contends, that "Large inflammatory tumors of the pelvis—that fill the cavity or extend even above it—if they come to antopsy, are found to be due to plastic inflammation of the peritoneum, agglutinating together the uterus, its appendages and large masses of intestines—involving even the omentum. If the inflammation clear up, there has simply been a plastic peritonitis with or without bands of adhesion following in its train. If the inflammation runs on to suppuration, an abscess forms."†

According to Polk,‡ to whom I am greatly indebted for much information on this difficult subject, "These masses of tube, ovary etc., are, as a rule, attached to the posterior face of the broad ligament, sometimes well up, again low down, but may also be in direct contact with the uterus, attached to its side, or its posterior face; sometimes in as close contact with the latero-posterior aspect of the pelvic wall, a free space existing between the mass and the uterus. Then, again, you may have the entire region posterior to a broad ligament, from the pelvic floor to the brim, filled with the mass; these may be single, on but one side; but quite often they exist on the posterior face of both broad ligaments, and if extensive, by coalescing they may fill the whole of the posterior portions of the pelvis. . . . In the formative or acute stages of these masses, you will find an abundant supply of serous exudation filling the interstices between and

* *Para-and Peri-Metritis*, by Matthews Duncan.

† *New York Medical Journal*, October 9, 1886, p. 299.

‡ *The Medical Record*, September 18, 1886, p. 313.

about the viscera implicated; and this exudate is responsible for the boggy sensation given the examining finger, and for the size and smoothness of contour presented a little later. This inflammatory mass not only contains, but is surrounded by, organized lymph thrown out by the implicated peritoneum. The exudation at the periphery serves to circumscribe the mass, and thus stands as a barrier between the central inflammatory nidus and the general peritoneal cavity. Sometimes this proves ineffectual, and then to the picture heretofore confined to the pelvis we have general peritonitis added. Entering the mass, we find the evidences of inflammation best marked about the fimbriæ of the tube, or tubes, from whence it can be traced directly into their cavities." Dr. Polk goes on further to say that the end of the oviduct will always be found in the centre of the inflammatory mass, and the ovary near by. But the latter may be attached to the pelvic wall, to the side of Douglas's pouch, to the rectum, to the sigmoid flexure, to the cæcum, to the posterior face of the broad ligament, to the womb, and to the bladder. The adherent ovary and its corresponding oviduct, in fact, form in a large number of cases the inflammatory mass; for when the former are removed by an operation, the mass at once disappears. These statements Dr. Polk abundantly substantiates by numerous cases, in which the parts were examined during a laparotomy or at an autopsy; and he comes to the incontrovertible conclusions.

“*First.*—That the inflammatory masses commonly found about the uterus, which are described under the headings, ‘Pelvic Cellulitis’ and ‘Pelvic Peritonitis,’ are the results of salpingitis, plus peritonitis—the tubal disease being the direct result of disease of the uterus; that such masses are composed of the tubes and ovaries, with sometimes adjacent viscera, the whole being united by recent or by organized lymph, the interspaces in acute cases, and sometimes in chronic cases, being filled with serous exudate; that such swellings may be augmented by secondary infiltration of the adjacent subperitoneal connective tissue, but such infiltrations are subor-

dinate in extent and influence to the peritoneal inflammation.

Secondly.—That these masses do not originate directly from the uterus or the vagina as a *cellulitis*, *except as the consequence of an evident septicæmia* ingrafted upon those organs, after an abortion, a miscarriage, a labor, or after some operation; that, even in such cases, it is more than probable that salpingitis and peritonitis will be associated with and predominate over the cellular inflammation; that when these masses do begin as a cellulitis (the patient surviving the septicæmia), they rapidly tend to suppuration; that they end very rarely in chronic indurations and swellings.”

From a large clinical experience, which supports the views of these gentlemen, I feel bound to subscribe to them. I, therefore, deem it best to take a broad, or generic, view of the subject, and to treat it as if it were a single entity, and not made up of two entities. It will certainly simplify matters better, both in comprehension and in treatment, to designate this group of contiguous inflammations under the one term of peri-uterine inflammation, than to divide them, as is usually done, into pelvic peritonitis and pelvic cellulitis.

Peri-uterine inflammation has like all other inflammations four stages: 1st. That of florid congestion; 2d. That of serous exudation; 3d. That of organization; and 4th. That of suppuration. Resolution, however, in the majority of cases, takes place after either the first or the second stage, and the formation of pus is fortunately the exception. Yet, pus may form without its being discovered, for it may be discharged too high up in the bowel to be recognized in the feces; or it may be formed in small quantities and be resorbed; or it may collect in a circumscribed locality and stay there indefinitely without pointing, behaving, in fact, like a cold abscess. Resolution after the 1st stage leaves no traces of the inflammation behind it, and so may resolution after the 2d stage. But often in the latter, the exudation of serum and of plastic lymph, instead of becoming resorbed, becomes organized, leading to adhesions of the pelvic organs or to permanent

thickening of the peri-uterine tissues. Sometimes the liquor sanguinis may not be wholly absorbed, but will remain encysted in the cavities formed by the lymph during its process of organization. This I have occasionally seen. The 4th stage—that of suppuration—I shall describe when I come to speak of pelvic abscesses.

Etiology.—Peri-uterine inflammation comes from abortions, because the ovum then has to be cast off from the whole surface of the womb to which it is attached in the early months of pregnancy, and from the large raw surface endometritis is very likely to occur. Criminal abortion is especially liable to be followed by endometritis, because in addition to the foregoing reason, labor is induced before the ovum has in any way become detached, and it is therefore violently torn away from the womb. The bruises and other lesions of natural labor will sometimes kindle up these inflammations, but very rarely if antiseptic midwifery has been scrupulously resorted to. In these cases the septic poison is probably transmitted in a great measure through the planes of areolar tissue, which bear the brunt of the inflammatory attacks, and tend greatly to suppuration. Yet even then the salpingitis and peritonitis will in the end overshadow the cellular lesions. Every operation performed on the uro-genital tract may be followed by peri-uterine inflammation; even intra-uterine applications, and those applied simply to the cervical canal. The pressure of a pessary and the introduction of the uterine sound have, to my knowledge, been causes. So have the sudden suppression of menstruation by a chill, and the regurgitation, through an open oviduct, of menstrual fluid or of other uterine secretions or excretions, when the womb is so badly flexed, or the cervical canal so narrow, as to prevent an easy escape into the vagina. Any kind of discharge into the peritoneal cavity, of blood, of serum, or of pus will almost always light up an inflammation of the pelvic peritoneum to which it gravitates. Any external violence may result in inflammation of the peri-uterine tissues; so even may the careful examination by a physician of the pelvic organs by abdominal manipulation or by vaginal palpation.

Gonorrhœal infection is unfortunately a most common factor in the production of this inflammation, especially the gleet form, when the man deems himself cured, or at least incapable of communicating the disease to the woman. The vagina first becomes involved, next the endometrium, then the inflammation steals up the mucous membrane of the oviduct, causing a salpingitis, and finally attacks the ovary and the peri-uterine peritoneum, sealing the one to the other, occluding the oviduct, and greatly disorganizing the reproductive apparatus. The woman remains, usually for the rest of her menstrual life, more or less of an invalid, and she is commonly sterile. It is this form of peri-uterine inflammation that is less amenable to treatment than any other, and that demands more frequently than any other the removal of the uterine appendages. Often have I found the ovaries the seat of a foul abscess, or the oviducts greatly distended with serum or with pus.

Symptoms.—Pelvic pain is usually the most common and the most exacting symptom, but its site and its character will vary according to the tissue in which the inflammation begins. If the connective tissue be first involved, the pain will be of a dull throbbing character, gradually increasing in severity, and will be referred usually to one or the other broad ligament. If the inflammation starts in the peritoneum, there will often be severe stabs of pain in the uterine region. These are sometimes so severe as to cause the patient to scream out or to writhe with agony. In puerperal inflammations the initial symptom is often a chill, sometimes not amounting to more than mere creeps, at other times to a severe rigor; but this is rare in the other forms, unless the attack is a very sudden and acute one. The bladder usually becomes irritable, and micturition is frequent and painful. This is brought about, either through reflex action, or from inflammation of the vesical peritoneum, or from phlegmon of the connective tissue lying around its neck. Constipation is the rule, but occasionally the reverse obtains, and the diarrhœa may prove very stubborn. The temperature shows

evening exacerbation—in mild cases it rarely rises above 102° ; yet no matter how mild the case, the pulse is as rarely found under 110. More commonly it will reach to 120 beats in the minute. In severe cases the temperature may rise to 105° or even higher, with the pulse not over 120; but usually in such cases the pulse sympathizes, and beats from 120 to 140 times in the minute. The prognosis then is a grave one.

Tympanites is rarely absent; the abdominal wall in the pelvic region is very sore to the touch, and the patient, in order to relax the abdominal and pelvic muscles, usually lies on her back with the knees drawn up. In a few days, the period of effusion having ended, or its brunt having passed, all the symptoms improve; the pain lessens, the temperature falls, and, if absorption of the exudate and resolution begin, the patient gradually recovers, and will be able to leave her bed in from one to two weeks. If, however, the exudation is plastic from the outset, it will agglutinate peritoneal surfaces one to another, and the adhesions may become organized and pseudo-membranous. In this way the pubic organs, womb, ovaries, bladder, rectum and intestines may become matted to one another in one mass, or the womb may be bound down to the sacrum: the patient is then left more or less crippled for life from these lesions. Not infrequently the inflammation reaches the fourth stage, that of suppuration, which is commonly ushered in by a rigor or by creeping chills, followed by a rising temperature and increase in the pulse-rate. Hectic fever with evening exacerbations and night-sweats usually indicates this stage, and it generally continues until the pus gains an outlet, either naturally or artificially. The most frequent, and also the most desirable, channels through which the pus escapes, are those of the vagina and the rectum. When the abscess bursts into the rectum, tenesmus and a diarrhoea of short duration usually occur, followed by great relief in the pelvic distress. If the abscess bursts low down, pus will be detected in the stools: but not, if the opening is high up. Sometimes the bladder is perforated, and the pus then escapes with the urine; but this is not so favor-

able a mode of exit. The abscess may point in the abdominal wall, and be discharged in the groin above Poupart's ligament; or below it through the saphenous opening. Very rarely it finds an egress through the obturator foramen or the sacro-sciatic notch. Several times have I seen the pus burrow in the connective tissue lying between the rectum and vagina, and escape through four or five openings around the anus and vulva. Owing to adhesive inflammation and to the protective barrier of organized lymph, the abscess very rarely bursts into the peritoneal cavity—a mishap which almost inevitably ends in death. Should the abscess burst at its most dependent point, and the cavity be single, it stays collapsed and soon heals up, the abscess-wall being in time absorbed. When, however, the outlet lies above the floor of the abscess, or there are several pus-pockets, or but one cavity has burst, abscess after abscess will form and burst, the pelvic cellular tissue becomes riddled with fistulous tracts, and the disease may last a lifetime.

Physical Signs.—Early in the disease a vaginal examination will elicit an unusual heat of the parts, and great soreness and lack of elasticity in the roof of the vagina, especially at the site of the inflammation. A few days later thickening and rigidity of the vaginal roof will be found, boggy like tallow when the areolar tissue is the one more affected, and dense and hard when the peritoneum is the tissue mostly involved. Very tender inflammatory masses will be found around the womb, often displacing it. The exudates which lie behind the womb are usually perimetritic, or peritoneal; those on the sides—viz., in the broad ligaments—are mostly parametritic, or cellular. Yet so very rarely is the disease limited to one tissue, that the exudates usually indicate inflammatory action in both tissues. A perimetritis may possibly be unassociated with a parametritis, but the latter very generally involves the peritoneum of the affected side. The exudation in the two tissues of the broad ligament, very often can be felt and outlined through the abdominal wall. Sometimes, indeed, when pus forms, it becomes a prominent tumor, visible

to the eye. The womb will be more or less fixed, as if melted tallow had been poured around it and had cooled to solidity. Displacement of this organ by the exudation tumor, will also take place, laterally and towards the opposite and healthy side if one broad ligament is affected; downwards and forwards if the post-uterine tissues are involved. If retroverted or retroflexed, this organ will be found so firmly bound down in that position that it cannot be replaced, and any effort made to move it will cause great pain. As resolution and resorption take place, the exudates grow smaller, the womb becomes more movable, until finally, in many cases, the parts are restored almost to their originally healthy condition; but perhaps never wholly. In a large proportion, however, the finger will detect hardening and thickening in some portion of the vaginal roof, which may remain indefinitely. Should pus form, the characteristic boggy feeling will be perceived per vaginam in some portion of an exudate. When suppuration takes place in the broad ligaments, it can often be detected by palpation through the abdominal wall.

Chronic Peri-uterine Inflammation.—It is probable that, like those of inflammation of the pleura, the effects of peri-uterine inflammation, especially when peritoneal, never wholly disappear. In the mildest cases some thickening of the membrane will remain constant. While, in severer cases, thick bands and strong adhesions, together with dense masses of new tissue, will displace and imprison the various pelvic organs, which will be found more or less fixed in position. The womb and ovaries will have lost mobility, and attempts to move them will give pain. One broad ligament or both will be dense and inelastic. The womb may be displaced downwards and firmly held in a retroverted condition by adhesions to the sacral peritoneum. Or it may be pulled over laterally towards the affected side by cicatricial contraction of the broad ligament. The ovaries with thickened capsule may be prolapsed and fixed, thus causing pain in coition. The tubes will either show no traces of inflammation except thickening at their fimbriated extremity, or they

will be thickened, occluded, dilated, or bound in tortuous coils to the womb, to the lower face of the broad ligament, to the floor of Douglas's pouch, or to the pelvic wall. Sometimes they will contain pus, or a muco-purulent fluid; more frequently they will be distended by a clear fluid or by a bloody one.

In the chronic form of this inflammation sterility usually obtains. This is caused either by the thickening of the ovarian capsule, which prevents the escape of the ova, or by occlusion of the oviducts, or by dislocation and thickening of the fimbriæ. The woman is never wholly well. She has constant backache, more or less of pelvic pain, interfering with locomotion, and endometritis with leucorrhœa and menstrual derangements. There will very often be dull ovarian pains, or sharp ones, radiating from the groin, especially from the left one. Sciatic pains are not unusual, and recurrent pelvic inflammations by no means uncommon: Reflex symptoms, such as irritability of the bladder, and nausea or even vomiting are rarely absent. Sexual desire is often quenched, and sexual intercourse is painful from the fixedness and inelasticity of the parts. Nerve-prostration is a frequent attendant on this disease, and then adds its group of protean symptoms to the pelvic ones.

Treatment.—In the acute stage of peri-uterine inflammation, absolute rest in bed must be insisted upon until all inflammatory action has ceased. For the pain, some preparation of opium must be given and in full doses. In this disease, opium is our sheet anchor. I have seen one hypodermic injection of morphia cut the disease short; but my favorite way of administering this drug in this disease is by suppositories, each one containing a grain of the watery extract of opium. One suppository may be given every two, three or four hours, according to the urgency of the suffering. Quinia in ten grain-doses should also be prescribed until a marked impression is made either on the temperature or on the sense of hearing. If improvement in temperature and in the pulse-rate fail to follow the use of quinia, the tincture of

aconite in drop doses can be cautiously employed. I have always derived benefit from a large poultice of Indian meal or of ground flaxseed, applied to the abdomen as hot as can be borne and changed frequently. From the first, if the temperature is high, an ice-cap ought to be applied to the head. Sometimes, if the inflammatory symptoms do not yield, another ice-cap may be advantageously substituted for the hot poultice; but, in my experience of this disease, warm applications to the abdomen are more grateful than cold ones. From the outset of the inflammatory symptoms, very good effects will be gained by vaginal douches of hot water, repeated twice a day. The quantity of water used should not be less than a gallon, and its temperature as hot as can be borne. If the nozzle be made of hard rubber instead of metal, a temperature of nigh 120° can be sustained without discomfort. In patients of full habit exhibiting signs of a frank peritonitis, and not of a septic one, local or general abstraction of blood will be followed by marked benefit.

By the foregoing means the inflammation may be cut short and the disease end by resolution. Usually, however, the second stage is reached with more or less of exudation. A vaginal examination will now reveal a fixedness of the womb, and thickening and great tenderness of the tissues above the vaginal vault. Later, exudation-masses may be found laterally in the broad ligaments, or posteriorly in Douglas's pouch. The object of the physician should now be to prevent the organization or the suppuration of the exudates. The abdomen below the umbilicus should be painted with the tincture of iodine until the skin becomes raw, or blisters may be applied. Strangury is less likely to follow the use of blistering fluid, and I therefore prefer it. Three coats should be applied, and the belly immediately covered with a poultice. Iron should not, as a rule, be given, as it tends to increase pelvic congestions. The quinia must be continued, but in smaller doses, and mild vegetable tonics resorted to, such as the compound tincture of gentian. The latter I usually combine with potassium bromide and potassium

iodide. At this stage of the disease, when the brunt of the inflammatory symptom has passed, and organization of the exudates is threatened, the following prescription will be found very valuable:

R. Hydrargyri chloridi corrosivi,	gr.j.	
Ammonii chloridi,	3 ij.-3 iv.	
Misturæ glycyrrhizæ co.	f. 3 vj.	M.

Sig.—One dessertspoonful in water every six hours.

When the fever has wholly passed away, and nothing but exudates remain, the treatment should consist of daily douches of hot water, tampons of cotton saturated with boro-glycerine, and the application of a strong tincture of iodine to the vaginal roof, every fourth or fifth day. Alterative tonics will now come into play. One of the best is the "Mixture of the Four Chlorides:"

R. Hydrargyri chloridi corrosivi,	gr.j.	
Liquoris arsenici chloridi,	gtt.xlvij.	
Tincturæ ferri chloridi,		
Acidi hydro-chlorici diluti,	aa f3iv.	
Syrupum zingiberis ad	f 3 vj.	M.

Sig.—One dessertspoonful in water after each meal.

Other very excellent tonics are Basham's mixture with fractional doses of strychnia, and a mixture of one part of Fowler's solution to nine of the syrup of the iodide of iron. Ten drops of the latter mixture are given after each meal on the first day; eleven drops after each meal on the second day; twelve drops after meals on the third day, and so on until, on the twentieth day, thirty drops will be given after each meal. The dose is then lessened daily by one drop, precisely as it was increased, until ten drops are again reached. In ordinary cases, in from four to six weeks the patient is restored to comparatively good health. The cure is indicated by the absorption of the exudates, by the disappearance of the backache, pelvic pain and endometritis, and by the re-establishment of natural menstruation.

Often, however, the patient does not show the foregoing signs of improvement, and does not return to her former good

health. A condition of chronic peri-uterine inflammation now obtains. The organization of some of the exudates has taken place, and the pelvic organs are either matted together, or they stay fixed at some point and are immovable. Usually the womb is retroverted, and fastened to the sacrum by false membranes. The ovaries are often displaced downwards and glued firmly to the floor or to the sides of Douglas's pouch. This unnatural condition of these parts causes pelvic and ovarian pains, which shoot down the sciatic and genito-crural nerves, or radiate towards the groin and back. Locomotion is crippled, the upright position causes pelvic throbbing, the bladder is irritable, the bowels are costive, the appetite poor and capricious, night sweats are not uncommon, sexual desire is usually quenched, coïtus generally gives much pain, and the woman's health declines. Sometimes at every menstrual flow, acute but local inflammation is rekindled, and the patient thus becomes a chronic invalid. For this chronic form of the disease I have found nothing so effectual as absolute rest in bed, with massage, electricity, a liberal diet and such tonics as I have just mentioned. Gentle manipulation, or massage, of the fixed pelvic organs will now be of great service, followed by applications of iodine to the vaginal roof, and tampons of boro-glycerine. The massage is made by the physician, who will gently move the cervix to and fro, and raise and press upon the retroverted fundus and upon all the pelvic tissues. These movements, by stimulating the lymphatics, promote absorption of the exudates. They also lengthen out the adhesive bands, and thereby give greater mobility to the parts; but they must be made very gently and without the infliction of much pain. When pain is localized—and it usually is in the left ovarian region—a succession of small blisters will often give much relief. After the patient has improved sufficiently to warrant a journey, she should be sent either to the sea-shore or to the mountains.

By these means, a lady thus afflicted will be restored to a very fair condition of health—sometimes to perfect health. But usually she never is the same woman that she was. She

is liable to remain sterile, to have diseased ovaries and oviducts, and to suffer from menstrual derangements and pelvic aches, until the menopause is established. Occasionally no benefit will inure from this treatment, and the question may come up as to the desirability of breaking up uterine adhesions by abdominal section, and of removing the disordered ovaries and oviducts. Especially will this question come up whenever these organs are clearly enlarged and diseased, or menstrual exacerbations increase the trouble, and add to it at every month. But, while warmly advocating this radical treatment when it is called for, I know of no operation which has been more abused. The operation of oöphorectomy will be described in its proper place.

Pelvic Abscess.—In spite of the promptest treatment of the acute inflammation, abscesses will form. Usually their existence can be determined by palpation, but very often, until pointing occurs, the physician will have to be guided wholly by the symptoms, such as chills, sweats and hectic fever, yet these are not always pathognomonic. The golden rule for pelvic abscesses is the same as that for abscesses in any other part of the body—viz., to liberate the pus as soon as its presence has been ascertained, provided it can be reached without danger to intervening structures, and provided delay will simplify the operation and do no mischief to the patient. Very often, however, a pelvic abscess forms and bursts into the rectum, without the possibility of any interference on the part of the physician. When the abscess can be felt per vaginam, and the intervening tissues are thick, it should be emptied by the aspirator and washed out with a one to one thousand solution of corrosive sublimate. Should it refill or should it point towards the vagina, a small incision must be made into it. The beak of the light uterine dilator is then passed in, and the opening made much larger by divulsion. This greatly lessens the danger of hæmorrhage. A drainage-tube must now be inserted and kept there until the abscess has healed up. For a drainage-tube the glass one used by ovariologists answers admirably, provided the flaring end is

passed in first; and so will the ordinary rubber catheter, but it must be secured by outside straps. Daily injections of a 5% solution of carbolic acid, or a 1:2000 solution of corrosive sublimate should be made.

All these abscesses should, as a rule, be opened where they point; but if the abscess can also be felt through the roof of the vagina, a counter opening in this, its most dependent portion, is often of great advantage. In chronic abscesses the fistulous tract should be enlarged, preferably by the uterine dilator, and a drainage-tube put in. Where several fistulæ exist the most dependent one is chosen for this purpose. When a fistulous tract in the groin remains unclosed, a good plan is to probe it with a uterine sound, and to cut down upon the tip of the sound if it can be felt through the vaginal roof. A rubber drainage-tube can now be drawn through the whole tract, and the abscess cleansed daily. Some obstinate abscesses I have cured by constant irrigation with a claret-colored solution of potassium permanganate. Carbolic acid is too virulent a poison to be used in irrigation, at least I have found it so. When an abscess empties into the rectum or the bladder, and remains chronic, a counter opening should, if possible, be made in the vaginal roof, and a tube put in. To do this safely, the operator must seize the moment when the abscess has filled, and can be felt through the vaginal roof. Very often, however, the fistula never closes and the abscess cavity, being always in state of collapse, cannot be distinguished. In such a case, search in the rectum for the mouth of the fistula, pass into it a sharply-bent uterine sound, cut down upon its tip through the vaginal roof and insert a drainage-tube. This operation I have repeatedly performed, and always with success. When the fistula opens into the bladder, and the walls of the abscess are always collapsed, the only remedy, as it seems to me, is to open the abdomen, find out the exact position of the pus-cavity, and, guided by the hand in the abdomen, to make a counter-opening into it per vaginam. I have done this once, and with complete success.

In chronic abscesses in which pointing is delayed or does not take place, and the condition of the patient demands interference, laparotomy should be performed. An incision long enough to expose to view the abscess-wall, should be made in the *linea alba* very near to the pubes. If the sac fortunately be found adherent to the abdominal wall, it should be incised, the pus let out, the cavity washed out with a solution of corrosive sublimate, and a glass drainage-tube put in. If the sac is not adherent, it should be surrounded by sponges, and emptied by the aspirator. The opening should then be enlarged, and its edges included in the sutures which close up the abdominal wound. A drainage-tube is put in, and the cavity kept cleansed until it heals up from the bottom. If the sac is too small for its upper walls to be brought in contact with the abdominal wall, a counter-opening should be made into it per vaginam, and a tube introduced by that channel. Old and neglected abscesses are sometimes stimulated into healing up, by curetting the pus-secreting surfaces.

Of course, as in other chronic abscesses, due regard must be paid to supporting the system and building it up, by tonics, stimulants, and a liberal diet. In weak patients rest in bed is imperative, and general massage or electricity will often do much good.

LESSON XXI.

LACERATION OF THE CERVIX UTERI.

THE cervix uteri often gives way during labor, far more frequently than it ought—far more frequently, indeed, than it would, were nature oftener allowed to take the lead. In these busy days there is unfortunately a tendency to urge on labor, more, I fear, for the sake of the physician than for that of his patient. The means used for this purpose are, the early rupture of the membranes, the administration of ergot, the resort to the forceps before the os uteri has become dilatable, and the efforts made to push up the thinned-out cervix over the presenting part. Now, these means hasten the passage of the head through the os uteri, and consequently they are fraught with danger to the integrity of the cervix. Among them the early breaking of the bag of waters takes rank, for it is far more frequently resorted to than any other mode of quickening labor.

To show how common this practice has of late become, let me give some instances: At a meeting of one of the branch societies of the British Medical Association, a member stated* that “he was in the habit of rupturing the membranes as soon as he arrived in every case of labor, and found this very useful.” Another remarked “that at one time he thought the membranes were of some use, but he did not now believe it.” Yet each of these statements was allowed to pass unchallenged. Again, a late writer,† in giving an analysis of eight hundred cases of labor, says: “I have never found any ill effects from rupturing the membranes when the os is the size of a shilling, but find that the child’s head is a better

* *British Medical Journal*, January 5, 1878, p. 17.

† *London Lancet*, October 20, 1877, p. 569.

wedge than the bag of liquor amnii. I am further convinced that much assistance can be rendered by the accoucheur gently dilating the os uteri with the finger during a pain, after the rupture of the membranes." Instead of sharply criticising this unsound practice, a leader* in one of the most influential British medical journals, to my surprise, warmly upheld it. "Dr. Matthews Duncan," it adds, "in his book on the 'Mechanism of Natural and Morbid Parturition,' has given experiments which go to show that the pressure necessary to rupture the membranes is about as great as that required to expel the child. It seems reasonable to suppose that if less force is expended in rupturing the membranes, there will be more in reserve to expel the child." Now, all this I cheerfully grant, and if the chief end of the obstetrician be to deliver his patient *quickly*, the early rupture of the bag of waters is a means to the end. But, if his chief end is to deliver his patient *safely*, he must, other things being equal, let the membranes alone until the os has fully opened. And this advice holds with greater force in first labors, in which such rents of the cervix uteri far more frequently take place.

This lesion may happen at any point in the rim of the os uteri, but when single the site of the fissure is usually on the side towards which the vertex presented, and it is therefore more often found on the left verge. When the rent is a double one, the cleft, according to my observation, usually runs across the cervix from left to right, splitting it into a fore-lip and a hind-lip.

Apart from bleeding, no immediate symptoms attend this lesion. The cervix is so lengthened out, bruised, and swollen by the passage of the child, and it hangs down from the vaginal roof so limp, that a rent in its rim is not easily discoverable directly after labor. Such a lesion may, however, be suspected whenever an oozing, or even a flooding, keeps on, notwithstanding that the womb is firmly contracted and the perineum is uninjured. I have seen an alarming flood

**London Lancet*, November 3, 1877, p. 662.

ing happen from this cause, but this is rare, because, as shown by Emmet, although the rent may extend beyond the line of junction with the vaginal roof, the utero-cervical artery, or circumflex branch of the uterine artery, from its own elasticity and from its loose connections with the parts, will usually stretch, and thus escape being torn across.

The behavior of such a rent depends largely upon its site. If it be in the fore-lip or in the hind-lip of the cervix, or even if it cleave the cervix in two through the conjugate diameter, it will very generally heal up, and that by the first intention. This fortunate result happens, because the greatest play of the womb being forward and backward, the fissure-line coincides with the line of the greatest uterine mobility. The lips of the wound, therefore, do not spread apart, but are kept together by the elastic compression of the vaginal walls. When, however, the rent is lateral, or it cleaves the cervix transversely, the fissure-line no longer coincides with the axis of motion, but crosses it. Also, in the up and down play of the womb, the hind-lip is liable to hitch on the sacrum and be forced away from its fellow. Hence these two sets of uterine movements, together with exuberant growth of the submucous cervical tissue and hypertrophy of the Nabothian glands, tend to separate the flaps and keep the wound from healing.

When immediate union takes place, nothing untoward happens beside the primary symptom of bleeding. But, if the wound is a deep one, and slow to heal up, or it gapes open and fails to close, symptoms of peri-uterine inflammation are, in my experience, pretty sure to show themselves. On the third or the fourth day the woman will complain of pain in that broad ligament which corresponds to the torn side of the cervix. This pain is often ushered in by a chill. Occasionally, if the rent be a double one, the inflammation, after subsiding on one side, will take a fresh start on the other. The pulse keeps up and the body-heat runs high. Sometimes pain will be absent, and the inflammatory symptoms latent, yet the convalescence will be slow, unaccountably so unless firm

pressure be made in each iliac fossa, when the woman will flinch.

By retarding the process of involution, such inflammations keep the womb bulky, make the lochia too abundant, and delay the convalescence. If the rent heals up, the woman's health will in time become re-established; but should no union take place, she will rarely be the same woman that she was before her labor. When she leaves her bed she may complain of a sense of weight in the pelvic regions, of back-ache, of a constant tired feeling, of loss of sexual desire, of pain during coition, or of a show following it. Her linen will be stained and stiffened by an abundant leucorrhœal discharge. The menses will usually be profuse, and the intervals between them shorter.

In time the nervous system becomes deranged. The woman loses sleep, and gets to be a complaining and an hysterical creature—perhaps, indeed, a confirmed invalid. Sometimes lactation, by keeping the menses in check, and by its derivative action on the blood supply of the womb, will stave off these symptoms. But as soon as the child is weaned, or the menses reappear, the woman will begin to complain.

Here, I bring before you a case in point. This woman was delivered instrumentally of her first child some four years ago, and has ever since complained of such symptoms as I have just given you—the symptoms arising from a womb arrested in its involution. Two years ago, and again last year, she miscarried when two months gone. These mishaps seemed to add fuel to the flame, and she became much worse. She is now weak and miserable, sleeps and eats badly, is never without some ache, is low-spirited and hysterical, and altogether in a pitiable condition.

Now, what has happened to produce all these troubles? As I expose the cervix, those of you near by can see apparently a blood-red erosion around the os uteri. But it is not an erosion; in her first labor her cervix was split open bilaterally up to the vaginal junction, as is represented in this diagram (Fig. 80), and the rent has never healed up. The flaps of the

wound have spread apart, and curled over like a split celery-top, exposing the cervical canal. Chafed by constant at-

FIG. 80.



CERVIX TORN BI-LATERALLY UP TO VAGINAL JUNCTION.

trition on the posterior vaginal wall, the now unshielded lining membrane of this canal began to shed its epithelium faster than it could be replaced, and became raw. Involution was arrested, and the heavy womb, having lost its vaginal prop, sagged down. Then, losing its angle of attachment to the vagina, it came to lie more like the stopper of a bottle—that is, more in the axis of the vagina. The male organ now impinges, not as before on the front aspect of the cervix, or below it, but directly into the split and gaping os uteri, robbing it of its basement membrane and epithelium. The countless loops of nervelets and blood-vessels which form the villi are thus left naked. Their exposure begets an irritation which attracts an undue flux of blood to the cervix. The swollen mucous crypts and submucous tissues of the cervical canal have pushed out before them the lining membrane, which thus becomes everted like the conjunctiva in ectropion. The constant fretting of the unprotected nerve-filaments excites local or reflex pains. Or perhaps, nature having tried her hand at a tardy cure, a nerve imprisoned in a dense mass of cicatricial tissue is unduly pinched, and its outcries aid in keeping up the mischief. See how tenacious is the discharge; I can draw it out in strings very nearly a yard long.

That this lesion is frequent, and that it is an important factor in the production of uterine disorders, witness the testimony of various writers. Dr. P. F. Mundé, who has written an admirable paper on the subject, illustrated by life-like chromo-lithographs, states, that of those women applying to him for treatment, 17 per cent. exhibit lacerations of the cervix.* Dr. H. T. Hanks puts the average at 8.4 per cent.; Dr. Montrose A. Pallen "at fully 40 per cent."† Dr. W. H. Baker, at 10 per cent.‡ Dr. Emmet, who holds the honor of first pointing out the significance of this lesion, and of first devising the means for its cure, deems it the cause of most of the uterine disorders. My own experience in the Dispensary for the Diseases of Women at the University of Pennsylvania would lead me to infer that about one out of every six women suffering from uterine trouble has an ununited laceration of the cervix. As another evidence of its frequency, I may add that I have operated for this lesion over three hundred times.

I have often seen profuse menorrhagia, stubborn leucorrhœa, cervical and corporeal hyperplasia, chronic ovaritis, and every kind of prolapse of the womb, starting from such a rent. Not long ago, I had in charge a woman who at her first labor—an instrumental one—met with a double laceration of the cervix. As it did not heal up, her convalescence was a tedious one, and she never got back her former good health. In her second pregnancy, when she first came under my care, the chafed and torn cervix began to swell and grow until it projected beyond the vulva. The pain and distress from this condition kept her on her back during the last month of gestation. Finally, in her labor, I had the novel experience of releasing the head from the grasp of the cervix, long after it had passed out of the vulva. After the birth of the child, I was able to pull the bruised and angry-looking cervix to a length of fully four inches outside of the body. As my advice for an operation was unheeded, the same thing

* *American Journal of Obstetrics*, January, 1879, p. 132.

† *New York Medical Record*, 1876, p. 823.

‡ *Boston Medical and Surgical Journal*, Sept. 20, 1877.

happened in a third labor. During this pregnancy, the swollen and purple cervix protruded at least two inches from her person, and showed a deep jagged notch on each side.

Now, although this woman conceived twice, yet this lesion is so common a cause of sterility, that I always suspect its existence whenever a guileless woman stops bearing after her first labor. This sterility is due partly of course to the disorders, the flexions, and the dislocations of the womb, which, as I have shown, follow such an injury. But it is due also to the acridity of the discharges, which kills the spermatozoa, or to the viscous plug of mucous which often closes the remnant of the cervical canal. Again, the deep notches in the cervix hinder that suction action of the womb during the sexual orgasm—just as the split nozzle of a syringe cannot suck up a thin stratum of fluid. Further, the cervical canal, denuded of its epithelium, presents such a barrier to the migration of the spermatozoa, as a desert to the advance of an army.

But these are not the only evils following such an injury. The weakened retentive power of the cervix often leads, as in our patient, to repeated miscarriages. This I have known to happen over and over again. Often, again, have I been obliged to puncture or to cross-hatch a brood of retention cysts, which aided in the eversion of the mucous lining. Once I removed a sessile polypus as large as a pigeon's egg, which grew out of a cluster of exposed Nabothian glands. Further, I feel very sure that almost every epithelial cancer of the cervix starts from such a constantly chafed and fretted surface. For, in my experience, a cancer of even a movable womb, with a ragged notch on one side of the cervix apparently eaten down to the vaginal junction, is no uncommon event. Also, it is very rarely found in virgins or in sterile women.

The diagnosis of such lacerations is by no means so easy as you would *à priori* suppose. There exists, indeed, no visible and tangible lesion of the body in which errors in diagnosis are so frequently made as in this. It is often mistaken for

cancer, but far more frequently for granular erosion—the so-called ulceration—of the cervix. When the flaps skin over without uniting as they sometimes do, they can be little or no difficulty in the way of recognizing the nature of the lesion. The finger will then feel the fissure, and the eye will see through the speculum a cervix, notched like a bishop's mitre when the slit evenly divides it, or gaping open like a shark's mouth when the slit unevenly divides it. But, when the epithelium has long been shed; when the abraded surface is studded with enlarged follicles which feel like shot, or it is roughened by red and angry-looking papillæ; when the cervix has increased in bulk, and each lip has curled over like the ends of a split celery-top, or like a mushroom—the nature of the local trouble is very likely to be misunderstood.

The pouting out of the mucous lining of the canal, and the curling over of the split lips, so efface the original fissure, that often it cannot be felt by the touch, or be seen by the eye. If a cylindrical speculum or an ordinary bivalve one be used, the convex surface of the cervix will be still more flattened out, and all traces of a fissure be so obliterated, that the red, raw, and angry-looking papillæ of the everted mucous lining of the cervical canal will be inevitably mistaken for an erosion,—that is to say, for what is commonly called an ulceration, of the womb (Fig. 81). This illusion is so perfect, that I do not suppose that there is a physician who has not made this mistake. I will go further, and venture to say that there is not a physician who, if he confines himself to the use of a cylindrical speculum, is not now treating some case of cervical laceration for supposed "ulceration." My own past mistakes in this direction embolden me to make these assertions. Sometimes, on the other hand, the cylindrical speculum will so close the torn lips as to conceal both the fissure and the patch of erosion. When the bivalve speculum is used, the liability to error is not so great; but even with it mistakes are constantly being made. Not unfrequently, when the naked and everted cervical canal is unusually angry-looking, bleeding at the slightest touch, and

perhaps fringed with cock's-comb granulations, epithelial cancer is suspected, and an unfavorable prognosis given. I have seen cases in which the question of malignancy could not be decided by the eye alone.

What then are the means for diagnosis? If any one of you

FIG. 81.



EVERTED MUCOUS LINING OF THE TORN CERVICAL CANAL, LOOKING LIKE AN EROSION.

should ever have in his practice a case of stubborn erosion of the cervix, secreting a vitreous and ropy discharge, or bleeding at the slightest touch—one in which the cervix fills up the whole lumen of his speculum; one which improves by rest, but relapses with exercise; or say, one in which the sound cannot be made to enter the canal at the centre of an apparently patulous os, as it ought to were the os merely enlarged, but only at one end of it; or if he should have a case which, by unremitting attention, he has succeeded in skinning over, and yet in a short time his patient returns for treatment, as bad as before, with the new epithelium rubbed off, by coition or by vaginal attrition—if he have such a case, let me ask him to examine his patient for a rent of the cervix, first with the finger and then in the following way: Place the woman on her back, and use a base-opening bivalve speculum; or on her side, which is the better position, and introduce a duck-bill speculum. Take next a uterine tenacu-

lum in each hand, and hook the fore and the hind lip of the cervix, each lip on its vaginal surface. Try now to draw the two lips together forward, and if a rent exists, they will come in contact, the cervix will become smaller, the supposed "ulceration" will disappear, and a cleft will run across the cervix. By such an examination he will probably find that the apparently superficial opening in the cervix, which he has hitherto taken for the os externum, is in reality the mouth of the uninjured portion of the cervical-canal, and on a level with the forks of the fissure, being actually from half an inch to nearly an inch away from the site of the original os externum. And he will by this time have discovered, that the collar of erosion surrounding this supposed os uteri, which he has been trying for months to heal, is nothing more or less than the naked and chafed mucous lining of the split-open cervical canal. He will now take in the situation, and see that this delicate membrane cannot be healed unless shielded, and that it cannot be shielded unless by the restoration of its protecting canal.

Let me not convey the impression that every woman who has an ununited rent of the cervix is doomed to sterility or to hopeless invalidism. Far from it; there are those who seem as unconscious of all ill effects from such a lesion, as some few healthy women who carry retroverted or retrorflexed wombs. One lady I know, who has borne several children, and is still bearing, although her cervix was split in two at her first labor. Another, with a like injury, has been barren since her first labor, but is otherwise well. In these two cases, however, each flap of the rent has skinned over, and their edges lie parallel and have not curled over. Sometimes, again, the menopause will bring relief; but usually it does not, because the secondary lesions, such as sub-involution, hypertrophic elongation, and uterine displacements, will still continue. When, however, the lips of the womb have curled over, and the cervix assumes the form of a mushroom, its free portion being the most bulky; when the mucous lining of the cervical canal thus becomes everted, and has conse-

quently been robbed of its epithelium; when a stubborn patch of erosion secretes an abundant and acrid discharge; when the womb stays congested or hypertrophied, or becomes displaced; then the only hope of a cure lies in the reconstruction of the cervical canal. In other words, whenever such lesions beget uterine disorders, and they very commonly do so, the woman will rarely get well without an operation. Sometimes, indeed, an operation will be needful, simply to make the injured cervix project far enough for a pessary to lodge behind it. And this brings me to the treatment of such lacerations.

An acute laceration of the cervix should be treated by great cleanliness and by rest, so long as inflammatory symptoms keep up. The vagina should be washed out twice daily by weak solutions of carbolic acid, or of potassium permanganate; for it is asking too much of nature to heal kindly a wound drowned and sodden in a puddle of stinking lochia. If hemorrhage be profuse immediately after the accident, a lump of ice should be placed in contact with the cervix. This failing, vaginal injections of hot water, of alum, or of tannin, may be made, but not of iron, which interferes with immediate union. In very bad rents it would, perhaps, be best to stop the bleeding by the introduction of silver-wire sutures. In any case, I think it should be the duty of an obstetrician to examine his puerperal patient carefully, both immediately after labor and just before he gives up his attendance on her, so that, if a rent of the cervix exists, he may discover it, and be prepared to treat it *secundum artem*.

Should the rent fail to close, and his patient refuse an operation, the best treatment will be that which lessens the local congestion, and tends to glaze over the naked villi. These ends are best furthered by vaginal injections of at least a gallon of water as hot as can be borne, by the puncture of the retention cysts, by the nightly introduction of a tampon charged with glycerine or with boro-glycerine, or by vaginal suppositories containing tannin or the iron subsulphate. One drachm of tannin together with half a drachm of metallic iodine, or two drachms of iodoform, dissolved in an ounce of

flexible collodion, makes an excellent application. It protects the raw surface by an alterative, a styptic and an elastic pellicle, which lasts for several days. Good will also be gained by painting the eroded surface every five days with a saturated tincture of iodine, followed occasionally before it dries by a weak solution of the silver nitrate. This forms a protective and an alterative crust of the silver iodide. The common practice of treating these erosions with the solid stick of lunar caustic is a bad one, on account of the cicatricial tissue which it leaves behind. Such a dense and gristly tissue often pinches peripheral nerve-filaments so severely as to produce ovarian or uterine neuralgia, wholly or partly quenching sexual desire, and causing other psychological disturbances. Often a pessary will do good, if for no other reason than that of lifting up the cervix off from the vagina, and of lessening the friction of locomotion. Since the menorrhagia in these cases often comes from fungoid proliferation of the endometrium of the sub-involuted womb, much advantage may accrue from the use of the curette.

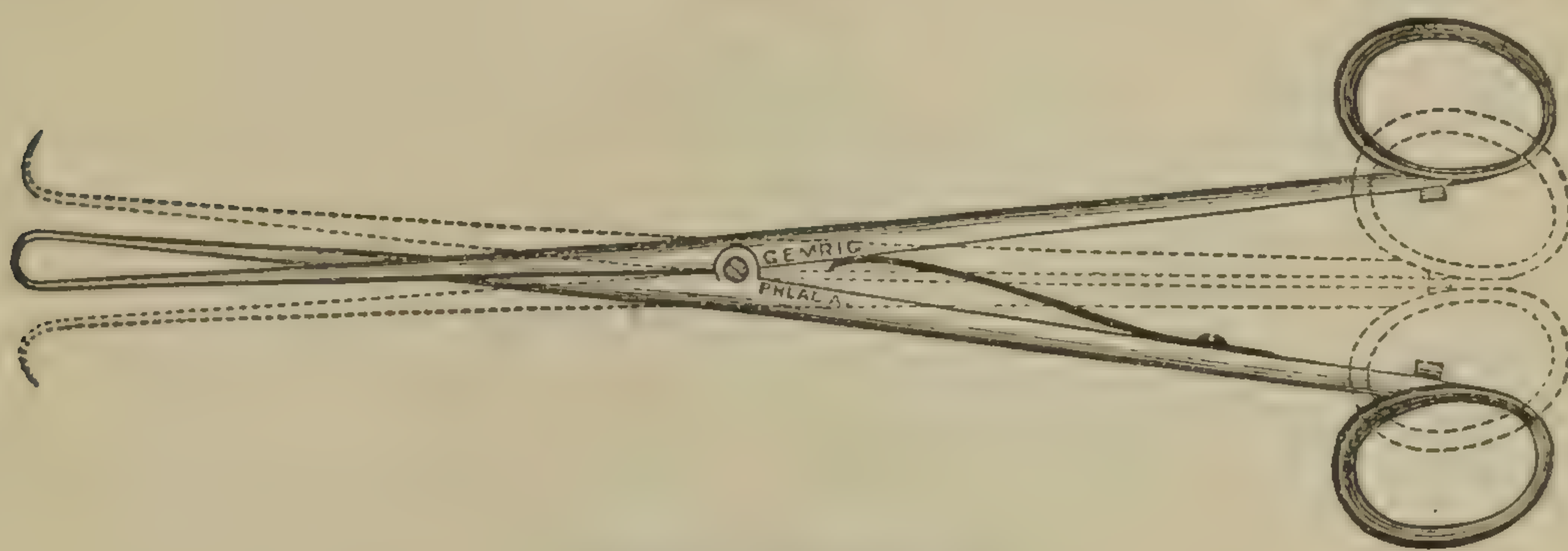
Should an operation be decided upon, it must not be hastily undertaken. Success depends largely on the state of the woman's health, and upon the condition of her pelvic organs. Some preparatory treatment will usually be needed. Whenever the monthlies are profuse, the preliminary use of the curette is always good practice. If the womb be fixed, or the roof of the vagina be hard and tender, an operation would be very likely to rekindle the embers of a previous attack of pelvic inflammation. If the cervix be engorged with blood, or be studded and stiffened with enlarged Nabothian glands, the denuded surfaces will probably not unite. Blood must be taken from the cervix by scarification, and these glands must be punctured and emptied. Vaginal injections of a gallon of hot water twice daily will be of service. So also will local applications of carbolated iodine, and vaginal suppositories containing half a grain of morphia and three of tannin. Pledgets of absorbent cotton dipped into a glycerole of tannin and packed in front of the cervix and behind it,

will meet two ends. They will make the cervical tissues more healthy, and will keep the lips from spreading apart. If the broad ligaments be tender, small blisters over them, frequently repeated, will do much good. In such cases I am in the habit of prescribing small doses of corrosive sublimate, united either with ammonium chloride, or with the tincture of the iron chloride. When all traces of inflammatory deposits have disappeared, the time has come for the operation, but not before, as a rule. In one obstinate case, however, I attributed their persistence to the irritation set up by the cervical lesion, and by curing this I cured the phlegmon; but this is hazardous practice.

The proper time for an operation on the female organs of generation is during the week following that of the menstrual flux. This woman's catamenia ended four days ago, and her cervix, through a preliminary treatment of scarification and of applications of iodine, is in a fit condition for the operation which I shall proceed at once to perform. But this operation is a very unsatisfactory one to perform before a large class. Very few of you will be able to see what I am about to do, and you will have to rely upon my fragmentary explanations as I go along. You may place the woman in the lithotomy position, but I generally prefer to put her in the left-lateral position, and shall therefore turn her on her left side. After introducing the duck-bill speculum, I first cleanse the vagina with a 1:1000 solution of corrosive sublimate, and then separate the lips of the fissure by two tenacula, or by the double tenaculum (Fig. 82), so as to find out the position of the cervical canal. I then draw them together, coaptating the lips, in order to determine the site and the size of the future os externum. Directly through the middle of this site is passed a needle armed with the strong linen thread used by shoemakers. The needle being removed, the two ends are tied together. By hooking up with a tenaculum that portion of the thread running across the fissure from lip to lip, and by drawing it out, I make two loops instead of one—that is to say, the loop is doubled at the expense of its length. These loops are sep-

arated and handed one to each assistant, who make gentle traction. The womb is thus brought down within operative reach, and the lips of the fissure are drawn apart.

FIG. 82.



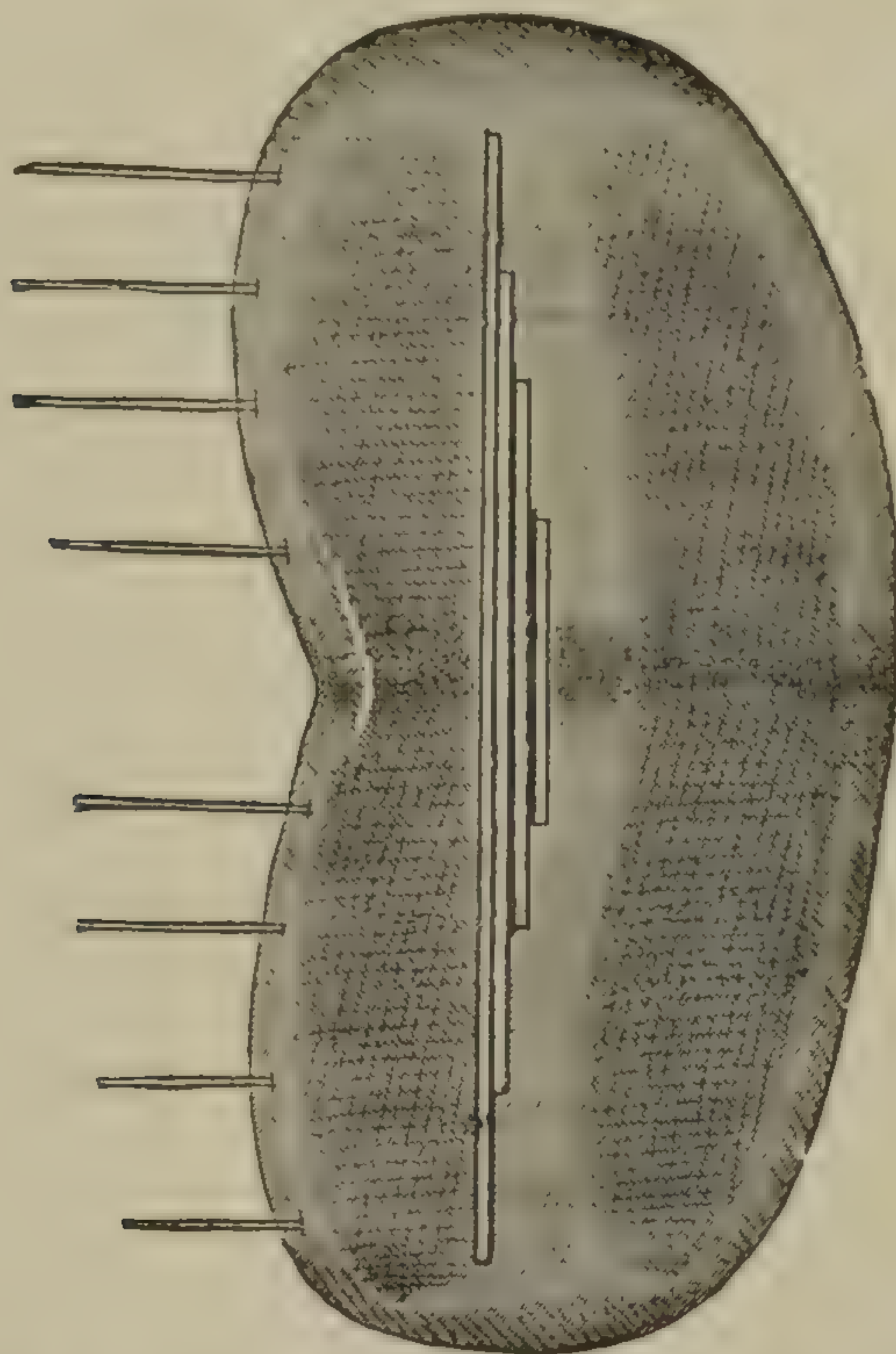
DOUBLE TENACULUM.

Having, with the eye, mapped out the amount of tissue needing ablation, and having left what landscape painters call room for repentance—for due allowance must be made for the after-shrinkage of the mushroom cervix, which might contract the os—I proceed to the denudation. On each lip I make two straight, parallel and shallow incisions, one on each side of the thread, and about a quarter of an inch apart. First, the left, or lower, angle of the fissure is denuded up to the two lower incisions. Then the right, or upper, angle of the fissure is pared down to the two upper incisions. This leaves on each lip, and directly opposite to each other, a ribbon of mucous membrane one-quarter of an inch wide, which will encircle and form the new cervical canal (Fig. 83). This denudation has been made mostly by a very delicate long-handled knife, and occasionally with variously curved scissors; one of the best being bill-shaped (Fig. 84).

On the lower, or left, angle I dissected off the cicatricial tissue in a single wedge-shaped piece—and this I always like to do, because it ensures absolute denudation. But in the upper, or right, angle, I was not able to do this, because, since the fork of this portion of the fissure dips into the vaginal roof, the circular, or cervical, branch of the uterine artery was in danger of being wounded. The surface there was, therefore, merely skimmed.

The hemorrhage during the whole operation has been free, and, by obscuring the parts, is troublesome. For preventing this, Emmet, to whom we owe all that we know about this

FIG. 83.



UNDENUDED RIBBON OF MUCOUS MEMBRANE. ALSO SHOWING MODE OF PLACING SUTURES.

operation, advises a preliminary vaginal douche of hot water, and also recommends a watch-spring tourniquêt placed high

FIG. 84.



BILL-SHAPED SCISSORS.

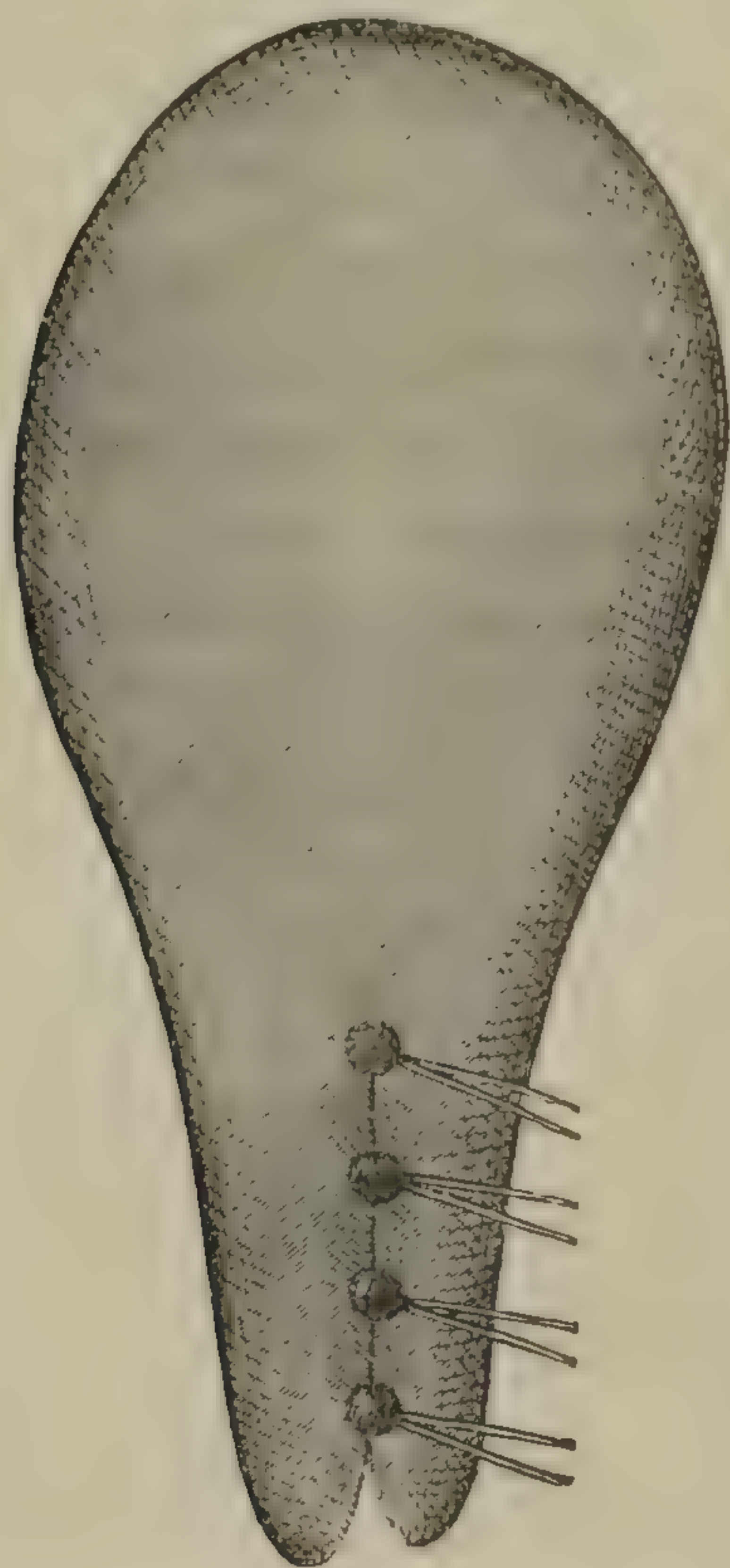
up on the supra-vaginal cervix; others employ the loop of a wire-écraseur. The hot douche acts very efficiently in shrivelling up the blood vessels; but I do not use the tourniquêt for fear that it might injuriously constrict the bladder or the

peritoneum in Douglas's pouch. Sometimes, when there is much dense and thick cicatricical tissue in the forks of the wound, a wedge-shaped piece will have to be taken out, and the circular artery may be severed. In that case, I have found that traction on the ends of a wire-suture passed deeply below the fork of the wound, will stay the bleeding, at least enough to permit further careful denudation, while the subsequent co-aptation of the raw edges by stitches will effectually stop it. Since the flaps are too dense and too much curled over to be brought into close contact, I shall shave off their redundant convex surfaces. At one point I have split open an enlarged Nabothian gland, which at once discharged viscid fluid like honey. The secreting wall of this gland may interfere with union at its site, and I shall therefore dissect it out of its bed.

The introduction of the sutures (Fig. 83) is the next thing in order, and it is by all odds the hardest part of the operation. The ordinary surgeon's needle is not strong enough to penetrate the dense and gristly tissues; besides that, its cutting edges might wound a vessel of some size. The best needle for this purpose is this short, round, lance-pointed one, devised by Marion Sims. Waxing the ends of a fine silk ligature, I pass them together through the eye of the needle. My assistant then separates them, and ties them in a half-knot around the loop just beyond the needle. The needle is secured in the jaws of a very strong needle-holder, and is passed with about as much difficulty as if it were penetrating leather. My assistant now sharply bends the end of a fine silver-wire suture (No. 31), and hooks it over the silk loop. As I pull the loop through, the wire, of course, follows. In this way I shall put in every wire suture, merely twisting the ends of each wire temporarily together. If the needle at its eye be furnished with a groove on either side, and if the wire be fine, the needle may be threaded with the wire, and the silk loop dispensed with. I rarely resort to the silk loop; but I am doing so to-day to show you how it is made and how used. The sutures are all in, and the wound will now be

syringed with carbolated water, so as to be rid of all clots. Each suture is then secured by clamping it with a perforated shot (Fig. 85). The denuded surfaces have been brought into such close and accurate contact, that not a drop of blood

FIG. 85.



SUTURES CLAMPED BY SHOT.

is flowing. Sometimes, however, a secondary hemorrhage may take place, but probably from a suture track, in which a vessel has been wounded by the needle. However arising, it may be staunched, as Emmet has shown, by vaginal injections of water as hot as can be borne, or by a saturated solution of alum, which, in my opinion, is one of the best of hæmostatics, besides not interfering with union by the first intention. I have, however, met with three cases of bleeding sufficiently bad to need a sponge tampon, yet the union was perfect.

The operation being now completed, some fine iodoform is

dusted over the cervix, and the vagina loosely plugged with iodoform gauze. The pain after the operation is very trifling, barely exceeding what most women suffer at their monthlies. The after-treatment will consist in keeping our patient bed-fast for two weeks, in binding her bowels for three days, and in drawing her water for eight and forty hours. At the end of that time the woman may go on her hands and knees, and empty her bladder herself. I prefer this position to that on the bed-pan, because in the latter there is some danger of the urine trickling down into the vagina and reaching the wound. After the second day the tampon is withdrawn, and the vagina washed out twice daily with a weak carbolated solution. On the tenth day the stitches will be removed. I shall not leave them in longer, lest they should cut deep furrows into the cervix which must heal by cicatricial tissue. When performed with care, and after the manner in which I have just described, this operation is perhaps the most successful one in uterine surgery. For instance, I have had two hundred and forty-three consecutive cases without a failure.

In illustration of the advantages gained by the repair of such a lesion, let me read from my case-book the history of two of my patients. The cases are not recent ones, because I now have not the time to write up my cases. The one has been chosen on account of my mistaking the rent for an erosion, or ulceration, of the womb; the other, to show what physical and psychical disturbances it may give rise to.

CASE I.—C. D., aged 27, had her first and only labor ten years ago. She has not conceived, nor been well, since. For a long time she was under the care of one of our best physicians. Failing to cure her, he sent her to me with a note, stating that she had the worst and the most stubborn erosion and leucorrhœa that he had ever met with. I found a young and handsome woman suffering distressing bearing-down feelings, frequent micturition, constant pain in her back—in short, with every ache that a disordered womb can possibly give rise to. Sexual intercourse was painful, and followed

by bleeding. The catamenia were profuse and protracted, and the intermenstrual leucorrhœa abundant. The womb was heavy, retroflexed, and 3.5 inches long. The cervix, badly torn bilaterally, was bulky and very tender to the touch. It was occupied apparently by a large blood-red erosion. From it and the cervical canal, there issued the most abundant and the most tenacious discharge I ever saw. It could be drawn out in strings fully a yard long. This happened some years ago, before I had begun to appreciate the important rôle which a torn cervix plays in the production of uterine disease; so for many months I mistreated her. True, I used douches of hot water, together with scarification and iodine, and also shored up the womb with a pessary, all of which was well enough, and gave her much relief. But I also applied chromic and nitric acids, the silver nitrate, and in short, used every known means to cure the supposed erosion. No further good came from them, however; and she finally gave me up.

Long afterwards, when my eyes were opened by Emmet's articles on this subject, I remembered this unfortunate patient and hunted her up. She had meantime been trying several other physicians, who had also failed to do her any good, but her confidence in me was shaken, and I found her in no mood for an operation. Yet other physicians were consulted, and with like results, until finally, driven by sheer despair, she returned to me, but in far worse plight than before. Coition was now shunned, sexual desire had nearly disappeared, and the seeming erosion had by this time been in a measure replaced by dense cicatricial tissue. In October, 1877, I denuded the edges of the rent, and cut away all the cicatricial tissue, which creaked under the knife and scissors like sole-leather. Three sutures were needed to close up one side, and four the other. Perfect healing took place, so perfect that in ten days the line of union on the left side could not be seen. The leucorrhœa at once began to lessen, and the other symptoms to mend. When I last saw her, about six months after the operation, the sound gave a measure-

ment of 2.5 inches; the os was round and free from the slightest vestige of erosion; the womb had righted itself, and no longer needed a pessary. She was, in short, well, and very grateful.

CASE II.—M. C., aged 30, gave birth to her first and only child, after a long and hard labor, in which the forceps was applied, and a still child delivered. Being the daughter of a physician, she had, beside her father, excellent medical attendance. After being bedfast for several weeks, she slowly mended enough to get up, but not without all the symptoms of arrested involution. Previously in rude health, she has never been well since, nor has she again conceived. I saw her first in the autumn of 1875, some four years after this labor. She complained of worrying pelvic pains, of great weariness and weakness, of loss of sleep and of appetite. There was also a total loss of all sexual desire, which led to complaint and estrangement on the part of her husband. Like the preceding case, she had severe menorrhagia, and an abundant and a stringy leucorrhœa. Her nervous system was so wholly upset that she was the victim of distressing hallucinations. For instance, she could not stay in a room by herself; had a constant apprehension of some impending danger; never dared to leave her home without a companion, and even then fancied that every one she met looked askance at her, or that some evil-minded person was following her. Body and mind were alike shattered, and she was altogether in very bad case.

I found the womb large and heavy, retroflexed and tender, length + 3 inches, the cervix on either side torn flush with the vagina, and the everted lining of its split canal crimson and angry-looking. She was averse to an operation, and I had to content myself with palliative means—pretty much the same as those used in the former case. She grew much better, but by no means well. Relapses were frequent, and for the next two years she was more or less under my care. Finally, her sexual apathy and her barrenness, more perhaps than anything else, led her to submit to an operation, and I

restored the cervix in June, 1877. Four stitches were needed on each side, and perfect union took place. Eleven months afterwards I saw her for the first time since she went home, and found her wonderfully bettered. For the first time she came to my office alone, and that in itself was to me a sure token of returning health. The womb had shrunk back to very nearly its natural size, the retroflexion had changed to a retroversion, the erosion had gone, the leucorrhœa had ceased, her hallucinations had vanished, and as she took pains to inform me, her sexual feelings had returned. She had not yet conceived, and that is a serious drawback to her happiness; so I inserted a pessary with the hope that a change of version would cure the sterility.

Let me here say that I have, on repeated occasions, found that retroversions of the womb have been spontaneously cured by the repair of a torn cervix. Following this hint it is my practice to introduce a pessary as early as possible after the operation—say in two weeks' time, when the parts are sufficiently united to bear the strain. I am not sure, that it would not be of still greater advantage, in some cases, to replace the womb and introduce a pessary directly after the operation.

LESSON XXII.

CANCER OF THE WOMB.

A CANCER of the womb usually begins on the vaginal portion of the cervix, and creeps upward. The part first attacked is that which bears the brunt of the “insults” of coition and of parturition. This course is not invariable, for I have seen a true cancer start in the body of the womb, and gnaw its way downward to the cervix. But the former course is fortunately the one so commonly taken, that in a large majority of cases the parts involved, being accessible, can be treated surgically, and, as I hope to show, beneficially.

My experience would lead me to say very emphatically, that cancer of the body of the womb is a disease more of old maids and of sterile wives; and that, on the other hand, in the immense majority of cases of cancer of the cervix, the disease starts from a laceration of the cervix—it is, therefore, almost always found in women who have borne children. Of several hundred cases of cervical cancer brought to my attention, I have not met with a single one in a virgin, and only two cases in undoubtedly sterile women. One of these two, however, although an exception to the rule, singularly confirmed it. The lady had a fibroid tumor which slowly enucleated itself. After she had suffered much pain and had lost blood for several weeks, I was called in and found the os uteri dilated to the size of a silver dollar. I easily wrenched the fibroid from its attachment, and delivered it, but with some difficulty, as it was larger than the os. A few months later cancer of the cervix set in, from which she died.

Since very generally a cancer on the cervix begins either as an open sore or as a fungous growth, its diagnosis is not often a matter of difficulty. Other diseases may be mistaken

for it, but very rarely is it mistaken for anything else. The speculum so often breaks off the friable vegetations, and starts up an obscuring, and sometimes a serious flow of blood, that it should not in the first instance be resorted to for the purpose of diagnosis. A digital examination is generally all that is needed, and for this purpose, in order that you may avoid the risk of infecting your puerperal patients, I should urge upon those of you who are right-handed, to train the fingers of your left hand. If vegetating, a cancer of the cervix may be taken for a polypus or for a fibroid growth. If an open sore, its bleeding character, its hard and sharp rim, its pit filled with rough and friable granulations, the crater-like ulcer, present unmistakable tokens of malignancy. Should a cancer in its early stage be undistinguishable, by the ordinary tests, from other cervical diseases, the diagnosis may be cleared up by the introduction of a sponge-tent. Thus, if the cervix soften down, the os dilate, and the mucous membrane become movable under the expansion of the tent, the disease is probably a benign one. If, on the other hand, the cervix remain hard, its mucous covering immovable, and the os unyielding, the suspicion of malignancy will be confirmed.

How to distinguish the various kinds of uterine cancer is not only often impossible, but it is clinically needless. The life-saving problem seeking solution is, not the character of the cancer—whether it be scirrhus, or be encephaloid, or be epithelial—but the removal of the cancer. Yet it is well to bear in mind that of these three kinds, the epithelial, and especially its vegetating form, is the least malignant and the most localized. While still unprepared to range myself under the banner of the “localists,” I am yet sure that uterine cancer very commonly attacks women of fine physique and of blooming health; and that, as pointed out by Cruveilhier, a cancer of this organ is, of all cancers, the least prone to infect the system. Its victims die, not so much from specific systemic poisoning, and from transference to distant organs, as from septicæmia, from embolism, and from the exhaustion

induced by pain, by sleeplessness, and by the bloody or the serous fluxes. I am also further satisfied that the patient or the "localist" will live longer, suffer less, and stand a better chance of a cure, than the woman who is treated with palliative measures only.

Whenever the cervix becomes the seat of a malignant growth, the common sense indications are, either to eradicate the disease, or to check the excessive serous and bloody discharges, to correct the fetor, to allay the pain, and to prolong life. Now, the crumbling vegetations and the surface growths cause these serous, bloody and fetid discharges. The pain comes from progressive infiltration. It stands, then, to reason, that whatever restrains these must prolong life. And, of course, if the disease can be eradicated, life may be saved for good. Hence the plan which meets these indications is assuredly to take away the whole, or as much as possible, of the diseased structures. To achieve this, the whole cervix must be amputated, and that either by the cold wire of the *écraseur*, or by the hot wire of the battery. Should this operation wholly remove the cancerous mass, well and good. But if not, the remaining outgrowths, and the underlying infiltrated tissues, must be dug out with the finger-nails, scraped off with Simon's spoon-curette (Fig. 86), and snipped off with scissors.

FIG. 86.



SIMON'S SPOON-CURETTE.

This curette is much improved by having its edges serrated. An excellent instrument, also for this purpose, is Reamy's gouge-forceps. I have found it to work well, especially in clipping off the hard edges of the crater-like sore. The resulting deep and funnel-shaped cavity must next be either charred by fuming nitric acid, or seared over by the hot iron.

By the *hot iron* I mean the ordinary actual cautery, or the benzoline cautery, or the porcelain domes of the galvanic battery. And here let me say that I have found the Paquelin

cautery to be the best for this, as well as for all other gynecological purposes.

We often have cases of cancer brought before us in this clinic, and many of you have already seen me operate by each one of the above methods. But we rarely see these clinical cases again, and know very little of their subsequent history. I shall therefore offer no excuse for reading the notes of a few cases which illustrate the different radical operations, and whose subsequent history I was able in a measure to trace.

CASE I.—Early in November, 1873, I was summoned into the country by my friends, Drs. Joshua R. Evans and R. N. Downs, to see Mrs. A. M., a woman of about forty, and the mother of several children. I found her bed-ridden, and looking as if she had not long to live. She was, in fact, so low as to be dull of hearing, stupid, and apathetic, like one in the last stages of typhoid fever. Her rest was broken by severe stabs of pelvic pain, and her strength exhausted by alarming inter-menstrual hemorrhages. By the frequency of the latter her complexion had become waxy, and her flesh so translucent-looking as to give the impression that, by the aid of a strong light, one could map out every viscus of her body.

Some months before, she had begun to feel unusual sacral pains; then, to have watery and bloody discharges; and, what with the loss of rest and with the drain of vital fluids, she had become so weak as to take to her bed some three weeks before my visit. I found the upper portion of the vagina filled by a mushroom-like tumor, which sprang from the cervix of a movable womb. With some misgivings, on account of her weakness, we put her under ether, and noosed the mass in the loop of the *écraseur*. The whole cervix was cut off, but not without the snapping of a very strong wire. Some cancerous nodules beyond the reach of the wire were scraped away with Simon's spoons, but hastily, on account of an alarming hemorrhage which followed the removal of the mass. This was checked by an application of Monsel's solution, and by plugging up the vagina. The tumor was subsc-

quently examined by Dr. J. G. Richardson, who pronounced it to be malignant.

A week later I charred the whole raw surface with fuming nitric acid. This visit is vividly impressed on my mind by the following circumstance, which I note down as a warning to others. At the suggestion of a chemist, who should have known better, I had closed my bottle of nitric acid with a rubber stopper, instead of with the glass one, which was liable to get loose. During the jolting of the railroad cars, and of a ride of several miles in a carriage, the stopper was attacked by the acid and a gas generated. While kneeling before my patient, and stooping over the bottle to open it, the stopper popped out, and a sudden explosion forced out a fine spray of the contents over the upper portion of my person. I quickly plunged my face and hands into a basin of water, and fortunately escaped with nothing more serious than a smart conjunctivitis and the ruin of a suit of clothes. Since this lesson I have used no other stopper than a glass one, and, before taking it out, I always cover the bottle with a wet wash-rag, and avert my face.

But to return to my patient: After another such application, and the use of arsenic, iron and ergot, she improved astonishingly. I never saw any one so low recover so promptly. The cervical stump skinned over, her hemorrhages stopped, her pains and aches left her as if by magic, and the color came back to her lips and cheeks. She very soon got out of bed, and for seventeen months performed all the duties of a brisk house-wife. During this time I saw her perhaps half a dozen times. She came, not on account of any local trouble, but to be reassured that all was doing well. Each time I found the womb movable, and with no other reminder of a cancer than the absence of the cervix. To all intents and purposes she was perfectly well.

On May 29th, 1875, I was again asked by Dr. Evans to see her. I found her exhibiting marked cancerous cachexia, and suffering from cruel sacral pains of recent origin. The still movable womb was absolutely without a vestige of disease.

But through the posterior wall of the vagina I felt a hard nodulous tumor firmly attached to the sacrum. Nothing more could be done for her than to allay her sufferings. A few weeks later she died.

CASE II.—J. R., a German woman, aged fifty-one, had four children, the last one four-and-twenty years ago. Her menstrual flux ceased in 1870, but in November, 1873, a hemorrhage took place, which she mistook for rejuvenescence. Since then she has become much reduced by repeated floodings and by constant rest-breaking pains. Early in November, 1875, I saw her for the first time. The so-called cancerous cachexia was then very marked. Her complexion was leaden, and she was so weak as to need help in getting on the examining table. Most abominable was the stench arising from her person. I found the upper portion of the vagina blocked up by a large nodulated mass, so friable that a very gentle digital examination brought on an alarming hemorrhage. I was glad enough to be able to check it with Monsel's solution, and by a tampon.

On November 16th, 1875, she was etherized, and brought before the medical class of the University of Pennsylvania. With the wire-écraseur, a cancerous excrescence as large as a goose's egg was removed. The womb was now found to be immovable, the cervix much enlarged, and occupied by an excavating ulcer. Its sharp and rugged margin gave a crater-like form to the part. There was no chance at getting the wire-loop above the site of the cancer. So, with the fingernails of my left hand, I dug out a handful of the more brittle growths, and scraped away the rest with sharp spoons of different sizes. Such portions as resisted these modes of attack were snipped off by the scissors. Free bleeding kept up until healthy structures were reached. By this operation the cervix was hollowed out into the shell of a funnel-shaped excavation, which reached from bladder to rectum, and up as far as the internal os. Into this a large sponge was packed, and the woman put to bed. On the next day this sponge was removed and the vagina washed out. For three or four

days, in spite of repeated detergent injections, the stench of her discharges was overpowering. It poisoned the air of a large ward. It then passed away, and with it the slight febrile movement which always follows such operations. A week later I made a thorough application of nitric acid to every nook and cranny of the raw pit. Under arsenic, iron, the mercuric bichloride, and ergot, she rapidly improved. Her hemorrhages ceased, her appetite returned, her complexion cleared up, and she was soon able to resume her long-neglected housework. Her gratitude was great and rather annoying.

In the following July, eight months after the operation, she had a hemorrhage. For this I made another thorough application of nitric acid, and it did not recur. I saw her last on December 29th, 1876. She was not losing blood, nor suffering pain; but she sent for me on account of growing weakness. I found her up, but too feeble to attend to all her housework. For the past week a kind neighbor had helped her along with it. The cancer had attacked the body of the womb, and she was evidently failing. She lived some four months after this, but had no return of hemorrhage.

CASE III.—I. H., an English woman; was married nine years ago. She is twenty-nine years old, and has had two children. On account of several severe uterine hemorrhages, she was sent to me by Dr. T. J. Yarrow, early in March, 1875. Her youth, her blooming complexion and generally healthy appearance, pointed to a polypus or to a fibroid tumor, and I was somewhat surprised to find the cervix partly eaten away by a cancer. As the womb was movable, I urged an early operation. To this she did not at once assent, and it was not until April 22d that I brought her before the class. Seizing the cervix with a volsella forceps, I noosed it in the galvano-caustic loop, on a plane flush with the roof of the vagina. While burning it off, I made firm traction with the volsella, and counter pressure with the shaft of the electrode, so as to remove as much of the cervix as possible. Notwithstanding this was done very slowly, a small artery spouted from the

cup-shaped stump. The bleeding was stopped by the porcelain cautery, with which the whole wound was again seared over. The hot wire also scorched the upper portion of the vagina, but she did not seem to mind this, and recovered without a bad symptom. Several weeks elapsed before I could get the sore to skin over, and I began to fear that it never would. But under repeated applications of the silver iodide, it finally healed up, and the woman became well. Nineteen months after the operation, she came to have me examine her. She was about to return to England, and wished before going to know the condition of her womb. She looked extremely well. Apart from the absence of the cervix, I could not find a trace of a cancer.

CASE IV.—Early in the spring of 1875, I was asked by a medical friend to aid him in the removal of a cancerous cervix. The lady was over forty-five years old, and the mother of several children. She had suffered from all the usual symptoms of such a cancer, and had finally taken to her bedroom, but not actually to her bed. I was struck with the typical leaden complexion of her face. The cervix was extensively invaded, both superficially and deeply, but the womb was movable. One of its lips had been eaten away up to and slightly beyond the vaginal insertion. By two installments of the hot wire the cervix and a portion of the vagina were removed, and the rest of the diseased structures burnt out with the porcelain domes. During the operation much traction on the cervix was needed, and a portion of the bladder was at first included in the wire-loop. It would certainly have been cut off, had not the discovery been made by passing in the little finger through the urethra.

After recovering from the shock of the operation, the lady's complexion began to clear, but her convalescence was not a rapid one. It was not until after she had been sent to the seashore that she slowly but steadily gained in health and strength. More than eight years afterwards she died from an attack of pneumonia, the cancer never having returned.

CASE V.—In February, 1875, the day I cannot now recall,

the late Dr. W. R. Cruice asked me to see Mrs. B., who lived in the outskirts of the city. I found a married woman, over fifty years old, bed-ridden for several weeks, and so worn out by constant suffering, and so drained by repeated floodings, that as Dr. Cruice expressed himself, and as I firmly believe, "she had not a month longer to live."

The womb was immovable; the cervix much enlarged and shockingly ravaged by a partly vegetating and partly excavating cancer. Being unadvised of the nature of the disease, I had not brought the needful instruments. She was, moreover, so low that I dreaded even the loss of blood attending an operation. But, with Dr. Cruice's backing, I went to work, first with my finger-nails, and afterward with a small but sharp uterine curette that happened to be in my bag. About two handfuls of cancerous flesh were thus removed. Not having any fuming nitric acid with me, and the nearest apothecary being far from the house, I swabbed out the excavation with a saturated tincture of iodine. I never saw her again, but Dr. Cruice informed me that she soon got out of bed and attended to her household affairs. Two years after, he saw her in the street on her way to market. She lived six months longer, but with no return of hemorrhage, and died from exhaustion. I am sure that the operation gave her a new lease of two years and a half of life.

CASE VI.—About ten years ago I removed a cancerous cervix from a lady who was sent to me by my friend, Dr. Crawford Irwin, of Hollidaysburg, Pa. The parts were with difficulty noosed by the galvano-caustic loop, and for the first time in any of my operations, I scorched the vulva. By this circumstance the lady's convalescence was somewhat delayed, but she got well in three weeks' time, and remained free from the disease until her death from phthisis, three years later.

Now, in the foregoing cases, there can be no mistake between the relation of cause and effect. Nor do they embody my whole experience, for I have thus far treated over two hundred cases of uterine cancer, and with very like results. That is to say I have had repeated cases either of apparent

cure, or of marked prolongation of life from the operation. I cannot give the exact number because I have long ago ceased to keep any record of my cancer cases. In all, sexual abstinence was enforced, and the patient put on iron, the mercuric bichloride, arsenic, and ergot—the iron and mercury to redden the blood and to build up the system; the arsenic to repress the tendency to reproduction; the ergot to excite such tonic uterine contractions as tend to shorten the blood rations of these growths, and starve them out. The immediate effects of this treatment were almost invariably satisfactory. Life was lengthened out and made bearable; in repeated instances, as I believe, saved for good. The hemorrhages were stayed, the putrid discharges checked, and the cruel pains allayed. The appetite was restored, and bed-ridden patients were once more put on their feet. Even when the womb was firmly fixed, from extension of the disease to points beyond operative reach, much was gained by the removal of all the cancer possible, and, in several cases, by repeated removals of fresh growths. Another point noticed was the clearing up of the complexion after the operation. This fact leads me to think that the so-called cancerous cachexia is owing, not to a cancerous diathesis, but to slow absorption of septic material from the local cancerous lodgment. The cause is evidently topical, and not general.

In view of this favorable record, I cannot but think, that absolute cures would result far more frequently were the cases brought to the notice of the physician at an earlier stage, when, for instance, the womb is still movable, and the cervix superficially attacked. Contrary to the prevailing opinion, the beginning of this cruel disease is not usually attended with any pelvic pains and aches greater than those evoked by ordinary uterine troubles, and they are, therefore, disregarded. Again, the woman is often fat and hearty, with perhaps a good color, and these tokens of health deceive her and her friends. When, finally, she seeks advice, it is for some exacting symptom of an advanced stage, such as a hemorrhage after coition, or putrid discharges. The womb

will probably by this time be fixed immovably by cancerous infiltration in the connective tissue of the vaginal roof. Or the cancer may have eaten its way laterally to the peritoneum, or upward beyond the internal os uteri, and the parts are now too extensively diseased to be wholly removed. It must, however, be borne in mind that the immobility of the womb does not always imply an extension of the disease beyond its walls. The parts sometimes become matted together, from peri-uterine fibrinous exudation, an inflammation being set up by the irritation of the cancer.

The radical plan of treatment is not wholly devoid of danger, but less so than might at first blush be supposed. During the operation, if scraping be needful, the hemorrhage is free, usually quite so, until healthy structures are reached. But it has always yielded in my hands to an injection of table vinegar or of one part of Monsel's solution to three of water, followed by a sponge tampon, lightly packed in the funnel-shaped pit. The vascularity of the parts is such that, unless the cervix be amputated very slowly, a secondary hemorrhage may take place. This accident I have seen happen three times after the use of the hot wire, but not after that of the cold wire.

Injury to the peritoneum constitutes another hazard in the removal of the cervix. This accident cannot always be avoided, but the risk to life is greatly overrated. Thus, in order that the hot wire may pass through perfectly healthy tissue, Karl Braun does not hesitate to include a portion of the peritoneum.* He declares that he has in this manner repeatedly made an opening into the peritoneal cavity, yet with apparently no increase of risk to the patient's life. I have never ventured wittingly to invade this cavity, nor have I yet, in the removal of a cancerous cervix, met with the mishap of including the peritoneum in the wire-loop. But, on one occasion, while scraping away a cancer of the cervix with the nails of two fingers, I suddenly found them in Douglas's pouch. I took good care not to use any vaginal injec-

* *Philadelphia Medical Times*, February 20th, 1875, p. 325.

tions, and no untoward symptoms arose. The patient, indeed, kept her bed for only a few days, and then felt well enough to take a long journey home by rail. The bladder has been wounded, but it should never be. The introduction of the little finger through the urethra into this viscus ought always to guard against this danger, as it did in Case 4; while to ensure still further its safety, the cervix should, as a rule, but not as an inflexible one, be noosed while the womb is *in situ*, and not dragged upon. It is well, also, when the *écra-seur* is used, to pass up its shaft in front of the cervix, where the insertion of the vagina is lowest, and then by it to push up the womb before tightening the wire. This precaution is unnecessary when the hot wire is used. Soon after the operation the body-heat mounts to a sharp curve-peak, and the pulse sympathizes. This febrile movement lasts for four and twenty hours or more, and then the temperature tends to fall. On the third or on the fourth day, the discharges sometimes become offensive, and continue so for several days. After the scraping process, the stench is invariably overpowering. This must be met by repeated vaginal injections of a claret-and-water colored solution of potassium permanganate, while the danger of blood-poisoning should be lessened by the administration of large doses of quinia.

Should the disease return, the friable portions of the mass must be scraped off by a sharp curette or by Simon's spoons—a very efficient curette can, it seems to me, be extemporized, by heating red-hot the tip of a long and narrow spatula, and then bending it to nearly a right angle. Care must be taken as the bladder is approached by the instrument, for once I made a hole into that viscus with the curette. The raw surface must next be well swabbed with nitric acid, or with sodium ethylate, or be thoroughly seared over with the hot iron—the benzoline cautery of Paquelin comes admirably into play here. The previously detailed form of constitutional treatment should be continued indefinitely—the dose of corrosive sublimate being lessened and that of arsenic increased. Sexual intercourse must be absolutely forbidden, for attempts

at coitus are frequently followed by serious hemorrhages. From the very repulsive nature of this disease, this caution may seem unnecessary; but the fact is, that the sexual appetite of the woman is sometimes greatly increased by a pruritus vulvæ and by the excessive vascularity of the reproductive organs. With regard to other local treatment besides the nitric acid, Dr. Burrow, of Königsberg, has given such unqualified praise to the continuous application of potassium chlorate in substance,* that I have given this drug a fair trial. It certainly has done some good in my hands. I sprinkle the sore with the chlorate, and then tampon the vagina lightly. As the crystals exert a more powerful action than the powder, Burrow first uses the latter, and replaces it by the crystals when sensibility has abated. With undoubted success, pepsin in powder has lately been applied to these cancers in pretty much the same way. With it I have had one case of vaginal cancer cured—at least the disease has not returned for over a year.

In addition to the means employed by the physician, the patient herself should be taught how to check the constantly recurring hemorrhages. This she will very generally be able to do, either by injections of vinegar or of ice-water or of hot water into the vagina, or by cotton-wool tampons containing tannin or the iron subsulphate, either in the form of a dry powder or in that of a glycerole, or in that of a paste made by thickening a saturated solution of alum with tannin. These tampons or suppositories should, by the way, be removed, as a rule, in from two to three hours; for if left in longer, they may become so adherent to the warty surface of the cancer, as in the removal to tear off the more friable portions, with a renewal of the hemorrhage. Vaginal injections of any of the astringents, as strong as they can be borne, will also prove of service. When pain is present, morphia may be incorporated with any of the above washes and suppositories. A very efficient instrument for the woman to use, in making a prolonged contact of styptic or of deodorant fluids to the cervix, is a

* *Lancet*, April 12th, 1873, p. 525.

glass tube like the vaginal portion of a Fergusson speculum, to one end of which is attached a rubber bulb.

To correct the horrible odor, vaginal washes containing alum or carbolic acid, chloral hydrate, or potassium chlorate or permanganate, will be found extremely useful. Of these chloral hydrate has my preference, because it is not only an admirable deodorant and antiseptic, but a very prompt local anæsthetic. The plan by which I have best succeeded in making my patient the least disagreeable to herself and to her friends, is the frequent use by day of some one of the above washes, and at night the introduction of a suppository containing ten grains of chloral, or of potassium chlorate. The sole objection to this use of chloral is the vaginal irritation sometimes caused by it. Whenever the disease is far advanced, and the patient's sufferings are very acute, her euthanasia is all that is left to the resources of art. Anodynes should, therefore, be given without stint, in any way, shape or form the sufferer may prefer. For the agonizing pain in the back, so common in advanced stages of the disease, the promptest relief will be gained by an hypodermic injection of morphia; but a more permanent one sometimes follows the use of dry or of wet cups over the sacrum, or the application of a few leeches. For the suppression of the secretion of urine, occasionally seen in women suffering from this cruel disease, there is nothing better than small doses of potassium iodide combined with the tincture of digitalis.

LESSON XXIII.

OTHER OPERATIONS FOR TREATING UTERINE CANCER.

THERE are yet other modes of treating a cancer of the womb, which promise a larger measure of success than that gained by the plans of treatment hitherto given. But they can be used only in those exceptional cases in which the womb is movable and capable of being drawn down.

High Amputation of the Cervix.—By this method the woman is placed either on her back or on her side, and the vagina is stretched open by two retractors and the duck-bill speculum. The cervix is seized by a volsella forceps, and dragged down to the vulva. A circular incision is made at the junction of the vagina with the cervix, and the tissues stripped up for half an inch or more. The cervix may then be amputated by a wedge-shaped incision, and the two flaps brought together by deep sutures. Or, it may be burned off by the curved knife of Paquelin's cautery, heated to a dull red. In this way a cone-shaped piece is removed, and the whole cervix, or most of it, is extirpated. I have performed this operation many times, and without a fatal result, although twice I got into the peritoneal cavity—one with the knife and once with the actual cautery.

Total Extirpation of the Womb.—Sixty years ago Blundell proposed and put into execution the total extirpation of the diseased womb. This he did through the vagina in the following manner: After dragging down the womb by a hook in the os uteri, he cut through the roof of the vagina close to and all around the cervix, tying the vessels as they sprang. By this means he operated in four cases, of which all but one died. Others have occasionally adopted this plan, but with such bad success that it has fallen into disuse.

Extirpation of the Womb through an Abdominal Incision.—Recently, Dr. W. A. Freund, of Breslau, has revived Blundell's suggestion, by the removal of the cancerous womb through an abdominal incision.* The bladder and rectum having been emptied, and the uterine cavity and the vagina washed out by a ten per cent. solution of carbolic acid, the woman is laid on a table with her hips higher than her shoulders, and with her head towards the window. If the cancerous sore is open and likely to drop poison-germs on the peritoneum, in the removal of the womb, all ragged tissue is scraped away and the wound swabbed with carbolic acid, or seared with the cautery. The abdominal wall is next incised as in ovariotomy. The peritoneum is divided down to the mons veneris, but the cutaneous incision is prolonged still further down to the symphysis itself, the hair having been first shaved off. If the recti muscles are tense, their tendons are now partly or wholly divided. This is done in order to gain more room. The bowels are drawn up out of the pelvic cavity, and held away by a carbolized napkin. A strong ligature is next passed through the fundus of the womb, by means of which that organ is securely held, and raised up. This can be materially aided by inflating a colpeurynter placed in the rectum. The broad ligament on either side of the womb is then tied in three sections, by ligatures in three loops. In order to avoid wounding any blood vessel, the upper loop is passed through the oviduct above, and the ovarian ligament below. The middle loop transfixes the ovarian ligament above and the round ligament below. The lowermost loop is passed in the following manner: An unarmed perineal needle is pushed up from the vagina into the peritoneal cavity in *front* of the broad ligament and also of the uterine artery, the site of which is made out by a bimanual examination. The needle is then threaded and drawn back into the vagina. It is next returned, if possible, by the same vaginal puncture, into Douglas's pouch *behind* the broad ligament, is unthreaded, and removed. This loop is now completed by

* *Centralblatt für Gynakologie*, No. 12, June 8, 1878.

transfixing the substance of the round ligament. This ligature is the most difficult one of all to place, and it will fail in securing the uterine artery, unless the punctures in each lateral vaginal vault are made as close together as possible, and the needle is introduced in strongly divergent directions. The six ligatures are now tied, and the free ends of each one fastened together by a knot, the uppermost ligature on each side having two knots made in it in order to distinguish it from its fellows. The broad-ligament should next be severed on each side as far down as the round ligament, and all bleeding vessels secured.

The upper and posterior limits of the bladder having been defined by the catheter, the peritoneum uniting the bladder to the womb is divided by the knife. The front surface of the womb is then separated from the bladder by the fingers or the handle of a knife, the fundus uteri being meanwhile drawn by an assistant upward and backward out of the pelvis, by means of the transfixing ligature. As soon as the anterior vaginal vault appears as a reddish fold at the bottom of the wound, it is punctured from the vaginal side by a guarded knife, and the opening is enlarged on each side by shaving the cervix very closely, or by tearing the tissue with a uterine dilator. Through this wound one or two fingers are passed from above into the os uteri, and the cervix is gradually drawn upward through the wound, until the posterior vaginal vault is fully exposed, and the position of the two lowermost ligatures is seen. The incision can then be completed by closely shaving the cervix, so as to detach the womb from the lateral strips of vagina, and from the base of the broad-ligament, without dividing these loops, and with the least risk of injury to the ureters.

The womb is then removed through the abdominal wound, and the parts thoroughly cleansed with a five per cent. solution of carbolic acid. If the woman has not yet reached the menopause, the ovaries should be removed. This may be done, either by placing the uppermost loop of the three ligatures outside of the ovary, or by transfixing and tying the

pedicle of each ovary independently of this loop. After this, the knotted ends of the six ligatures are pushed down through the hole in the vaginal vault and drawn tense. This brings the ligated stumps of broad ligament down into the vagina. Still firmer traction being now made on the upper ligature of each side, which is distinguished by having two knots tied in its end, the uninjured portions of the front and hind layers of pelvic peritoneum fall together in a transverse fold, and obliterate the opening. The transverse slit thus formed is sewed up by gut sutures, and the peritoneal cavity shut off from the vagina. Any bleeding points of the cut portion of the broad-ligament which cannot be reached by a ligature, can always be compressed by pressure-forceps. These will lie in the vagina outside of the peritoneal cavity, and they may be allowed to stay on for several days. A tampon of cotton, fastened by a colored string to distinguish it, and soaked in carbolated oil (ten per cent.), is pushed up into the vagina, and the operation is finally completed by closing up the abdominal wound.*

Dr. Kochs proposes the following modification of Freund's operation, which simplifies it and saves time: He applies the first two ligatures on each broad ligament in the manner just detailed, and ties them. "The broad-ligament, as far as ligated, is cut through with the knife, care being taken to leave untouched the base of the broad-ligament. The now following detachment of the uterus from both bladder and rectum is almost bloodless. A double thread is then passed from the space between the uterus and the rectum, through the tissues between the bladder and the uterus. This may be done by means of a long, curved, blunt needle, or by simply using the index finger as a conductor. The thread being divided, the rest of the broad-ligament on each side is tied up. After this, the extirpation of the uterus may be completed." The ligatures he uses are of cat-gut.†

* *Obstetrical Journal of Great Britain*, etc., March, 1879, p. 819, and October, p. 467.

† *American Journal of Obstetrics*, April, 1879, p. 446, from *Archiv für Gynakologie*, XIV, p. 127.

These operations must of course be performed with every antiseptic precaution; but Freund, on the account of the length of time needed for the operation, does not allow the spray to play directly into the abdominal cavity. One danger attaching to each operation, and especially to the latter, is the liability of cutting across a ureter. This accident has happened at least twice in some twenty-eight reported cases. Perhaps it can be avoided by running two fine probes through the urethra into the bladder, and by conducting them into the ureters. The palpation and the inspection of the parts afforded then by the abdominal incision, would much facilitate this otherwise difficult manœuvre.

The extirpation of the womb for cancer, by Freund's method, has now been performed some 106 times, with but 28 immediate recoveries; the operation being too young an one to determine remote results. This looks like a small percentage of success, but in so cruel and so hopeless a disease, it is large enough to justify further trial of the operation.

Extirpation of the Womb per Vaginam.—This mode of extirpation of the womb is not only more easy of execution, but it is also more safe, and it has in a great measure taken the place of the preceding one. In 1886 Gusserow reported 253 cases of extirpation of the womb per vaginam with a loss of 23.3 %. But he included every case from the first one by Sauter in 1882. Pfannestiel has collected 154 operations up to 1882 with a mortality of 23%. But since that time there have occurred 36 cases with a death rate of only 8.3%*.

In this operation the duck-bill speculum and two vaginal retractors are needed, and the lithotomy position is adopted. After all friable cancerous vegetations have been scraped away, the raw surface is seared with Paquelin's cautery, and the vagina cleansed with a 1 : 1000 solution of mercuric bichloride. The cervix is transfixed with a stout thread, which is tied in a long loop. The womb being dragged down by this loop, a circular incision is made around the cervix at the vaginal junction, and Douglass's pouch is opened. The

* *The Lancet*; May 1, 1886, p. 825.

divided vaginal arteries are secured by pressure-forceps. A sound is passed into the bladder, which is now dissected off from the cervix by the finger, scalpel handle, and scissors. The anterior fold of the peritoneum is stripped up and off from the womb, as high as possible from the front and especially from the sides, where the ureters lie in it.

The broad-ligaments are then secured in the following manner. The fundus of the womb, being caught by a volsella forceps, or what I have found still better, by the hook of the old obstetric crotchet, is retroverted and brought into the vagina. The fundus is transfixed by a stout ligature and pulled over to one side of the pelvis. This brings into view the broad ligament of the opposite side. It is transfixed, as far away from the womb as possible, by a long handled aneurismal needle armed with a double thread which is tied on either side. Another ligature being thrown around between the one already applied and the ovary, is tied *en masse*, and the ligament is cut off as close to the womb as possible. The other broad-ligament is secured in the same way, and the womb cut off. The ends of these four ligatures are left long, and the two opposite sets are tied together, so as to bring the stumps of the broad ligament in apposition and close up the opening into the peritoneal cavity. The free ends are brought out of the vagina, which, being again thoroughly swabbed out by the mercurial solution, is lightly packed with either iodoform or sublimated gauze.

I have twice performed this operation by the foregoing method. But there are grave objections to it. One lies in the difficulty of retroverting the womb. The other is the liability of the ligatures to slip off from the very short broad-ligaments, making an uncontrollable hæmorrhage. To avoid these difficulties, the following procedure is adopted by Jennings.* A circular incision is made, the divided vaginal arteries being secured by hæmostatic forceps. The ureters are separated from the sides of the womb with the fingers, and the peritoneum stripped upwards over the organ as high

* *The Lancet*, May 1, 1886, p. 826.

as possible, so that a funnel-shaped peritoneal flap will remain after the extirpation of the womb. The uterine arteries are secured before this division. The womb is not retroverted, but, the peritoneal cavity being opened in front of the womb, and behind it, the fingers of left hand are passed into the latter. To gain room, the womb is pushed upwards towards the abdominal cavity. A loop of stout silk is carried in front of the womb by a staff like a vesical sound, and it is caught by the tips of the left index and middle fingers, and one end drawn downwards. In an analogous manner a second loop is passed around the other broad-ligament. Perforated shot are run up over the free ends of each ligature and are tightly clamped. Then a stout pressure-forceps is applied to each broad-ligament external to the silk ligatures, and the womb is cut away. The forceps are to remain *in situ* for "some hours." Instead of the forceps, double ligatures may be applied by transfixion, as in the former operation, and the womb cut away.

M. Richelot,* after the usual preliminary steps of the operation, secures the broad-ligaments in the following manner: If the womb readily descends, the index finger of left hand is introduced into the peritoneal cavity through the opening in front of the womb and is made to hook down the upper edge of the broad ligament. A strong forceps, sharply curved on the flat, is introduced, one blade on either side of the ligament, and it is then closed up to the last notch. The broad-ligament on that side is cut off close to the womb, which is now drawn outside, and the compression and the section of the second broad-ligament is made in full view.

When the womb does not readily descend, the operation is modified to suit this complication. A shorter and less powerful forceps is applied to the lower half of the broad-ligament as far from the womb as possible, and on each side of it. The ligament to the extent of its compressed portion is cut close to the womb. This organ thus freed on the right and left can now be drawn with less effort, and two more forceps are

* *Gaillard's Medical Journal*, October 1886, p. 364.

applied higher up, one on the upper half of each ligament, and reaching fully up to the cornua. The womb is then cut away. Other forceps besides these four pairs may then be found needful for bleeding points—especially in the edge of the vaginal wound. The vagina is now gently packed with iodoform-gauze or cotton, which snugly surrounds the forceps. These are removed in forty-eight hours, without disturbing the tampon, which is not removed for from four to eight days, according to the odor. Vaginal irrigations are not to be used, until after the tampon has been removed, and the wound so closed that the fluid cannot penetrate the abdominal cavity.

There is still another way of performing this operation which strikes me as a very sensible one.* The preliminary steps taken are analogous to those in the former operations, and the anterior and posterior uterine folds of the peritoneum are opened. Each broad-ligament is clamped by a pressure-forceps, worked by a screw in the handles. The womb is then cut away by a knife with a rectangular blade, which very ingeniously runs in grooves made in the sides of the jaw of the forceps. The forceps are kept on for forty-eight hours, and iodoform-gauze is used.

The German method of extirpating the womb per vaginam has also its merits. Dr. P. F. Mundé has lately performed it, and I here quote the description of one of his operations:

“The uterus being drawn well down by several strong vulsellum forceps hooked into the cervix, Dr. Mundé passed a strong silk ligature from each lateral fornix vaginae deeply around the base of each broad ligament, using for this purpose Polk’s jointed aneurism needle, recently described in the Proceedings of the New York Obstetrical Society (Feb. 1st, 1887). These two ligatures having been drawn down and tightened, constricted the uterine arteries, which pass in through the broad ligaments, thus removing the danger from hemorrhage during the subsequent steps of the operation. Next, the anterior vaginal fornix was opened

* *The Lancet*, January 1, 1887, p. 14.

by a transverse incision made with blunt-pointed scissors, care being taken to avoid cutting into the bladder, which was held up by a sound, or into the uterine body. The bleeding was very slight and easily controlled. When the peritoneum was reached, sutures were passed uniting its edge with that of the anterior vaginal wall, additional sutures being introduced as the incision was enlarged, these being for the purpose of preventing its being stripped off and pushed away by subsequent manipulations, and to stop all hemorrhage. A small, carefully disinfected sponge with a black silk cord attached, was now passed into the peritoneal cavity to absorb any fluid which might enter through the wound. The aneurism needle was again brought into use, and ligatures were passed from within outward through successive portions of the broad ligament on the left side, each ligature as it was passed being tied, and the portion of tissue which it constricted divided by the scissors, cutting, of course, between it and the uterus. This process being completed on both sides, nothing remained to be divided except the tissues posteriorly, and these were cut through with the scissors, peritoneum and vaginal wall being sewed together as in front. The uterus being removed, there was some bleeding, which was found to come from the posterior part of the wound, the deeper tissues not having been included in the suture of peritoneum and vaginal wall. Two or three deep stitches stopped this. To prevent retraction and difficulty in reaching the bleeding points in case of secondary hemorrhage, the stump of each broad ligament was now sewed to its corresponding vaginal wall. The sponge in the peritoneal cavity was removed and found to be but slightly stained with blood. The ends of the numerous ligatures on either side were bunched together, tied about with a bit of silk, and the ends cut off at the level of the vulvar orifice. Iodoform-gauze was *lightly* packed into the vagina, and the vulva covered with a wad of bichloride gauze held in place by a 'T' bandage.'*

* *Nashville Medical News*, May 1, 1887, p. 62.

LESSON XXIV.

VEGETATIONS OF THE ENDOMETRIUM.

THE vascularity of the womb, its sexual and periodic congestions, the structural energy with which it is endowed, and the lesions to which it is subjected, make it peculiarly liable to be invaded by benign and by malignant growths. The most common are those which develop in the endometrium in the shape of vegetations, and to those I shall to-day limit my remarks. Of these vegetations I shall describe three varieties, beginning with the one most frequently met with.

(a) *FUNGIOUS DEGENERATION OF THE ENDOMETRIUM.*

A very common cause of menorrhagia, and also of leucorrhœa, is a hyperplastic condition, or diffused thickening, of the lining membrane of the womb. This peculiar proliferation of the endometrium shows itself by sessile vegetations of a red, gelatinous appearance, which stud the mucous surface, and range in size from a millet-seed to that of a pea, by redundant mucous folds of a spongy consistence, and by slender club-shaped polypi. Then again there may be found small tufts of placental tissue, or placental villousities, which do not atrophy and disappear, because something has interfered with the process of involution. Various names have been given to this condition, but that of *endometritis hyperplastica* seems to be the best. A chronic endometritis is undoubtedly the most common cause; but whatever induces uterine congestion will also tend to produce these growths. Thus I have discovered them in wombs enlarged by a fibroid tumor, and in those containing a polypus. They are very common in subinvoluted and in retroflexed wombs, and are almost always present in neglected cases of laceration of the

cervix. I have also on several occasions found them in women who were avoiding pregnancy, and especially by the method of withdrawal. Under such circumstances the uterus maintains a high degree of congestion, and by constant repetitions of the exciting cause, it increases in size, its mucous lining becomes thickened, and fungous degeneration takes place. Sterility also seems to be no infrequent cause of the same thing, the menstrual and sexual congestions continuing without that much-needed break which gestation and lactation bring.

With regard to the influence of imperfect sexual relations, two very interesting cases came to my notice not long ago. In one, a lady consulted me at my office about severe uterine hemorrhages. A speculum examination revealed two small polypi dangling out of the os. These I twisted off, and then proceeded to examine the uterine cavity with sound. Upon its withdrawal I found on its tip a club-shaped polypoid growth, very nearly an inch long. This led me to use the curette, and I removed a large number of fungoid growths from the cavity, quite the largest in size that I have ever seen. She was married to a man twenty-five years older than herself. In other words, he had reached a time of life when his sexual powers were waning, while she was at an age when her own were vigorous and exacting. His embraces were at long intervals, and so imperfect that they inflamed her passions, without satisfying or allaying them. This was to my mind, as well as to hers, the explanation of the chronic uterine congestion, the origin of the cervical polypi, and the cause of the fungoid degeneration of the endometrium. And here let me say that, in my experience, so close a relationship subsists between the existence of these cavity growths and that of cervical polypi, that the latter are pretty sure to be accompanied by the former. This explains the fact, that the removal of cervical polypi is often not followed by the expected improvement in the menorrhagia. Whenever, therefore, cervical polypi are present, the uterine cavity should be searched for its own vegetations. In the other case, the disparity of

age between the husband and the wife was twenty years. No cervical polypi were present, but the number of vegetations removed from the endometrium was so large that I took alarm, and had them subjected to a careful microscopic examination. They were, however, found to be benign in character.

Endometritis hyperplastica is a disease more particularly of the child-bearing age; but, as will shortly be shown, it sometimes affects women long after the climacteric. Its existence can only be inferred by an ordinary uterine examination. The sound usually causes some blood to flow. When sponge or laminaria tents are used, these vegetations or mucous folds are so flattened out and smoothed out by the pressure, that the finger will rarely find them on the sides of the uterine cavity; but those on the fundus will very generally be felt either as slight roughnesses or as slight spongy tufts of mucous membrane, which retreat before the finger. The only sure test of their presence is the gentle scraping of the endometrium by a curette, which will dislodge some of them, and will then bring away either club-shaped polypi or soft gelatinous masses.

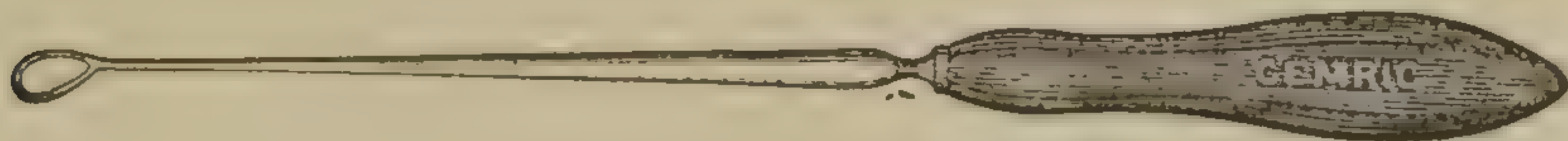
The disease being one of the endometrium, the microscopic examination will show characteristic changes in the mucous lining of the womb, but always reproducing the parent tissue. There will be found, according to Olshausen,* “greatly hypertrophied mucous membrane, with increase of all its elements, dilated follicles, enlarged blood-vessels, and great cell infiltration of all the connective tissue. Running up to the epithelium are large ectatic blood-vessels filled with coagula, and near them great numbers of white blood corpuscles, quite round and fresh looking; while around the enlarged follicles there are many spindle cells arranged in regular lines. These prove the chronicity of the affection. Cross-sections of the glands show them to be round and normal. The dilatation of the follicles differs in degree, but never amounts to a cystic formation visible to the naked eye. There is never any appearance of a decidua-like formation.”

* *American Journal of Obstetrics*, November, 1875, p. 561.

Nonat* calls them "*fongosités intra-utérines*," and describes them as of the same structure as the uterine mucous membrane, being largely made up of connective tissue and fibroplastic elements, and covered by the epithelium peculiar to the endometrium. Mundé, in his admirable paper on the "Dull Wire Curette,"† quotes the microscopic observations of these vegetations by Prof. M. D. Mann, of Buffalo, N. Y. According to him they "consist histologically of structureless basement substance, containing great quantities of small round cells and nuclei, and portions of uterine follicles and vessels."

When these vegetations are of this character, there is generally very little difficulty in the way of their cure. Their existence being established by the use of a blunt curette, such as Thomas's (Fig. 87), they are to be removed, if possible, by the same instrument. I say, *if possible*, because I

FIG. 87



THOMAS'S CURETTE.

repeatedly find the blunt curette failing to remove all the growths, and have to resort to Sims's sharp curette, which is a far more efficient, but, at the same time, a more hazardous instrument. Simon's spoon-curette is also a very handy instrument for this purpose. Whenever the redundant mucous membrane hangs down in spongy folds, I have found nothing to remove it so well as a small pair of fenestrated polypus-forceps. It pinches off each fold without injuring the sound structures; but it has the drawback of needing some previous dilatation of the cervical canal, which the curette does not ordinarily need. The sponge-tent sometimes cures this condition of the endometrium, either by crushing these vegetations, or by entangling them in its meshes and breaking them off during its withdrawal. In most cases the curette is needed

* *Maladies de l' Utérus*.

† *Edinburgh Medical Journal*, January, 1878.

but once; but occasionally it will have to be resorted to oftener. Immediately after using it, I am in the habit either of swabbing out the uterine cavity with a strong tincture of iodine, or of injecting into it a few drops of the same fluid. One circumstance attending the use of the curette is the occasional postponement of the next menstrual flux. This result happens often enough to make it worthy of note.

In illustration of this treatment, I shall give the brief histories of a few selected cases:

CASE I.—Mrs. H. J., aged 37, and seventeen years married, has had two labors at term, and one miscarriage ten years ago—the latter unwittingly brought on by the late Dr. Washington L. Atlee during a uterine treatment. Since then she has not conceived, but has had menorrhagia, which steadily progressed until her monthlies became floodings, and greatly reduced her. I thoroughly scraped the uterine cavity with the blunt curette, and brought away some vegetations and a few mucous shreds. The next period was so profuse that I repeated the use of the same curette, and again brought away like bodies. The following period was much better, and I thought her cured; but the succeeding one ushered in so serious a flooding that I made up my mind that an intra-uterine polypus was the cause of it, and I introduced three tents. On the following day, with the assistance of Dr. Hermany, of Mahanoy City, and of Dr. B. F. Baer, I put her under ether and removed the tents. The finger passed readily into the uterine cavity, but detected nothing beside proliferation of the endometrium. Using Sims's curette this time, I removed many vegetations, and among them a piece of deciduous-like membrane, covered with ramifying vessels, and about half an inch wide and an inch and a half long. The uterine cavity was next swabbed out with nitric acid. This was rougher treatment, in so far as the acid is concerned, than I should now adopt, but it was followed by no worse results than a slight soreness. This operation not only cured her of her floodings, but it more than cured her, for she did not again menstruate for six months, and became quite irre-

gular in the performance of that function, until the menopause was reached.

CASE II.—Mrs.——, of Omaha, consulted me about serious floodings at her menstrual periods, which had greatly reduced her strength. Failing to cure her by the blunt curette, I introduced a tent, put her under ether, and used the sharp curette and polypus-forceps. Many vegetations were removed, but her next period was postponed for two months. She got well without any further treatment.

CASE III.—M. McM., single, and aged 35, has always had free menstruation since puberty, but since January, 1878, her monthlies have been exceedingly profuse. They began last on May 21, and, as they continued despite all treatment until June 15, her physician on that day securely plugged her vagina, and sent her to the Hospital of the University of Pennsylvania. She was pale, bloodless, and so weak that she was brought from the railroad-depot in an ambulance. I at once put in tents, and kept them in forty-eight hours, so as to gain complete dilatation with one batch of them. On June 17, assisted by Drs. Palmer and Jones, the Resident Physicians, I removed the tents, and found three sessile polypi within the cervical canal, and one pedunculated one dangling within the os internum. This last one had acted like a ball-valve in hampering the flow of the menses, and had been the cause of much dysmenorrhœa. After twisting off these polypi, I scraped the endometrium and removed a large number of hyperplastic vegetations. She got well, and has stayed so ever since.

CASE IV.—F. J., a young married lady, from North Carolina, came to consult me about her general ill health, and especially about her sterility, she having been married already three years without conceiving. I learned that she had dysmenorrhœa, and was losing altogether too much blood at her periods. So I scraped her womb with a blunt curette, but, finding very few vegetations follow its withdrawal, passed in the sharp curette. Numerous club-shaped polypi were removed. Her disease was a typical example of what Olshausen

calls *endometritis polyposa*. Her next menstruation being free from pain and rather scant, she went home stronger and better than she had been for years.

Of such cases, of which the above are but samples, I have had so many and such successful ones by one, or at the most, two applications of the blunt or of the sharp curette, that I have ceased to keep any record of them. But I now come to a series of stubborn cases which have puzzled me not a little, and which lead me to think that I have much to learn on the subject of intra-uterine vegetations. For it appears, that sometimes, although not malignant, they may return over and over again, despite all treatment.

About two years ago the sister of a distinguished physician was brought to me from a distance, on account of terrible floodings. She was about fifty years old, a widow for over twenty years, of a florid complexion and full habit, and with a sluggish circulation, dependent, as I believe, on some obscure cardiac affection. She began to bleed about two years before, and kept losing more and more, until the loss had become alarming. Accompanied by her physician and by a friend, she was carried on a litter, after having her vagina very firmly plugged. I found the cervix large and flabby, the os unusually patulous and jagged, the womb retroflexed and measuring not quite four inches. So impressed was I with the conviction that she had a polypus, that I at once put in several tents, and invited my friend, Dr. John Ashurst, to aid me in its removal. Nothing was, however, found besides a very large number of vegetations, so large that I began to fear the case was one of diffused sarcoma. I therefore, submitted them to two excellent microscopists, who independently concurred in pronouncing them benign, and the production of an endometritis hyperplastica. Owing to exhaustion from these great losses of blood, this lady's convalescence was slow; but she ultimately got well enough to go home. She did not see her monthlies for nigh three months; they then began to return, and more and more abundantly, until I was obliged to interfere with the curette and remove a

number of growths, but not so many as at first. As after the preceding operation, she became much better, and stayed so for some months. Then, in spite of repeated applications of nitric acid made to the cavity by means of a platinum tube; in spite of many intra-uterine injections of iodine, of carbolic acid and of iron; in spite of the use of several pieces of the silver nitrate, the bleedings began to return, and I was again obliged to use the curette. She is now much better, but not wholly cured. Having lately complained of failing eyesight, I sent her to Dr. S. D. Risley, who found that she had several retinal clots, and I cannot but think that this hemorrhagic tendency may throw some light on the case.

Two other analogous cases have come to my attention, but unfortunately in neither were the vegetations examined by the microscope. Yet from the macroscopic appearance I should say that they were simply hyperplastic growths. One was a patient of Dr. J. R. Chadwick, of Boston. He had repeatedly used the curette in her case, and as often had removed some vegetations. Last month, while on a visit to this city, her catamenia came on with alarming profusion, and she sent for me. Finding great difficulty in checking them, I used the blunt curette and removed a number of vegetations, but to no purpose. Several tents were therefore crowded in, and upon their removal I was able, with the finger, freely to examine the endometrium. Other vegetations being found, I then used the sharp curette, and thus succeeded in stopping the bleeding; but she was not cured, as I have since learned from Dr. Chadwick.

The other case was a patient of my honored friend, Dr. J. G. Reeve, of Dayton, Ohio. He had in vain repeatedly used the curette and every known intra-uterine application for the cure of a menorrhagia, and finally he sent her to me. I used the blunt curette three times, followed each time by the sharp one, made two intra-uterine applications of nitric acid, and several injections of iodine, and yet I fear that she has not been cured.

Now, this lady was quite stout, and the two preceding ones

were of a full habit and of florid complexion. Excess of pabulum, therefore, may have something to do with the liability of these vegetations to return. Yet I cannot but fear that they may yet prove recurrent *per se*, and therefore quasi-malignant; but time alone will show this. Other physicians have been likewise perplexed. At a meeting of the Obstetrical Society of Boston,* Dr. Chadwick referred to one of his obstinate cases, and said that "Dr. Fitz had been unable to pronounce between these modified conditions of the mucous membrane and sarcoma in one or two specimens which he had sent him." Dr. Lyman stated that in one case the mass of proliferated mucous membrane "was different from anything he had before seen;" while Dr. Sinclair reported a case which he had been obliged to scrapethree times within a year, before a cure was obtained. In fact, these growths, while benign, sometimes behave like urethral caruncles or like polypi of the ear, and of the nose in their liability to return. Nor does their microscopic examination always throw light on their character. Repeatedly, excellent microscopists have pronounced to be malignant the fragments which I have submitted to their inspection. Yet the women, after several curettings, have been restored to perfect health. On this point Schroeder observes that "simple growths 'adenoma diffusum' from the uterine mucous membrane, have often a structure more closely resembling that of malignant disease than those in any other part of the body. In growths of connective tissue such numerous clusters of large spindle cells are found as closely to resemble a sarcoma; and the uterine glands are liable to be hypertrophied in such a way that, upon a section, they may be mistaken for the alveoli of a carcinoma, filled with epitheloid cells."†

As a help to diagnosis, let me add to this statement of Schroeder's, that, in my experience, malignant diseases of the endometrium are usually found in old maids and in sterile

* *Boston Medical and Surgical Journal*, October 10, 1878, p. 469.

† *Obstetric Journal of Great Britain*, April, 1877, p. 67, from *Zeitschrift für Geburtshilfe*, B. i. H. i.

women, while malignant diseases of the cervix are almost always found in women who have borne children.

(b) *VILLOUS DEGENERATION OF THE ENDOMETRIUM.*

Another form of uterine vegetations occasionally met with, is a villous degeneration of the lining membrane of the womb. To me this condition is yet a pathological puzzle, and in my ignorance I am compelled to resort to cases for illustration.

CASE I.—On April 7, 1877, I was asked to see Miss —, a somewhat corpulent maiden lady of fifty odd. Five years before, she had ceased to menstruate; but one year ago she began to lose blood from the womb at irregular intervals, and especially after riding in her carriage. For six months of the past year she had been attended by a very clever homœopathic physician, who, however, limited himself to a constitutional treatment. The rest of the time she was in the hands of a female practitioner, who treated her locally for “ulceration of the womb.” I found the cervix virginal and perfectly free from any vestige of disease, the womb movable and natural in position, but very nearly three inches in length. She had occasional hemorrhages, and was daily using two napkins to absorb a pinkish and an inodorous discharge. The os externum was too small to admit a curette, and, therefore, my treatment was an imperfect one until the 25th inst., when I prevailed upon her to let me use a tent. The next day I scraped out the uterine cavity with a blunt curette, removed a small number of gray fragments looking like boiled tapioca, and painted the endometrium with a saturated tincture of iodine. The discharge was reduced to the merest leucorrhœa, and, after paying her several visits, on June 7th I pronounced her cured and ceased my attendance. But on July 19th I was sent for, to learn that the pink discharge was beginning to return, and that a slight hemorrhage had taken place. The os uteri being now larger, I began a series of scrapings, both with the blunt and the sharp curette, and made intra-uterine injections of saturated tincture of iodine, and of strong solutions of the silver nitrate, of chromic acid, of tannin, and of the iron subsulphate.

The curetting and the applications did her much good for the time being, but whenever she made me desist from local treatment—for she could not bear much pain—the discharge began to return. Once I slipped in three tents and examined the uterine cavity with my finger. I found nothing but a number of isolated rough points, which I scraped away with the sharp curette, and then swabbed out the cavity with fuming nitric acid. Several times I pushed into the uterine cavity a good-sized piece of the solid nitrate, but all without avail.

Getting alarmed at the return of the vegetations, I submitted separate specimens to Drs. J. Tyson and Carl Seiler. The former, under the date of October 15, 1877, wrote to me that “The fragments are those of a papilloma (Zotten-Krebs) or villous cancer of the uterus.” In this decision Dr. Seiler also concurred, after an independent examination of entirely different fragments.

One day in February, 1878, after a truce of about three weeks, another hemorrhage took place. I now found the os almost patulous enough to admit my finger, and when I introduced a small glass speculum into the vagina, the pressure of it upon the lower portion of the womb squeezed out a number of brain-like vegetations of unusual size. The curette and intra-uterine injections were of course again resumed, but in addition full doses of arsenic were given; and so the treatment went on until last July, when, upon giving an unfavorable prognosis, my patient concluded that I could not cure her, and very wisely discharged me. I have since learned that she steadily failed, and died from loss of blood in the following February.

CASE II.—On March 28, 1878, I was called by a medical friend to see a lady of full habit, who was about 45 years old. For a year she had been bleeding very desperately at her monthly periods, and she had now been losing blood for three weeks. I found a very ragged os, angry-looking enough to have been mistaken for a cancer, and large enough to admit the finger half-way up the cervix. The womb was very bulky, and gave a measurement of four inches. So much blood es-

caped on the withdrawal of the sound that the diagnosis of polypus was unhesitatingly made.

Four or five tents were accordingly crowded in, and the next day I went fully prepared to remove the growth. The patient was etherized, and upon the withdrawal of the tents I was able to explore very carefully the whole uterine cavity. To my surprise, no polypus was present, but in its place a large number of vegetations. These I removed with the polypus-forceps and with the dull and the sharp curette. Most of them came from the left cornu, and they were so numerous that they must have filled a dessert-spoon. The endometrium was next painted over with a saturated tincture of iodine. No bad effects followed; she became very much better in every respect.

This improvement, however, did not last very long, and I was again compelled to use the curette on June 19th, and yet again on July 5th, removing on each occasion large quantities of vegetations.

At the last visit I swabbed out the uterine cavity with fuming nitric acid. The benefits this time were more lasting; for six months elapsed before my services were again needed, and she now is well, after the lapse of nine years.

CASE III.—Late in the night, some years ago, I was summoned to see the mother of a friend. She was sixty-five years old, and, like the preceding cases, of full habit, but in splendid health. Her monthlies had been very abundant, but they ceased at the age of fifty, and she had not since lost a drop of blood per vaginam. But during this day she felt her old menstrual pains, and at night, without other premonition, a profuse flow came on. I contented myself with giving her some doses of ergot, and two days later made a thorough examination.

The womb was movable and gave a measurement of three inches. The cervix showed no signs of disease, but the os was larger than it should have been at that time of life, and it gave egress to a fluid like the menses in color and in smell. The blunt curette being introduced, brought nothing away;

so a sharp one was used, which scraped off one hard mass as large as a bean, and numerous other tapioca-like growths of the size of a pea, which very nearly filled the bowl of a tablespoon. For eighteen months after this operation, she did not have a uterine symptom and remained in excellent health. Then slight shows of blood took place. These developed into hæmorrhages, and she died a few months later from undoubtedly malignant disease of the womb.

The high social standing of this lady made the question of malignancy one of great importance. On the other hand, the diagnosis of villous cancer and the constant return of the vegetations in my first case, and their large number with three returns in my second case, made me watch all with intense interest. Specimens of the vegetations of each one were submitted to Dr. W. F. Norris, who was kind enough to examine them for me with the utmost care, and the following is his report :

“ 27TH JUNE, 1878.

“ DEAR DOCTOR.—The specimens which you submitted to me are all essentially alike in structure.

“ They consist of ovoid masses covered with clotted blood. After the removal of the latter, they appear of an ash-grey color, covered with minute rounded prominences, and average about seven mm. in length by five mm. in breadth.

“ Some were examined while fresh by tearing, and without the addition of any reagent ; others were treated with a one-quarter per cent. solution of silver nitrate, and others, again, hardened in picric acid. Of the latter numerous sections were made, which showed everywhere a series of thin-walled blood-vessels, arranged in loops, covered by a columnar epithelium.

“ Those treated with silver nitrate presented over their entire surface a net-work of delicate black lines, including irregularly polygonal spaces due to the well-known action of this agent in intercellular material.

“ With one or two exceptions, all the ovoid masses were, when fresh, very soft, and readily crushed between the fingers. Those which were harder were similar in structure to the softer ones above described, but owed their hardness to blood-clots which lay in the interpapillary interstices, and which were undergoing absorption and organization. The surrounding tissues, as well as the clot itself, were tinted with various shades of decomposing hæmatin, and in the clot itself were numerous single and many nucleated cells, entangled in meshes of coagulated fibrin. There was nowhere any trace of the fibro-muscular walls of the uterus.

“ I consider the growth to be a papilloma. As regards the question of

malignancy, its epithelial nature, of course, gives it at once an appearance of relationship to the epithelial cancers; but this question, I think, must be decided by a section of the growth *in situ*, and the observation whether or not it has a tendency to infiltrate and spread in the proper uterine walls.

“Yours, truly,

“WM. F. NORRIS.”

I have not yet had the opportunity of making a section of such a growth *in situ*, but Dr. W. Lusk, of New York, reports a case* which died from progressive cachexia, and in which he secured an autopsy. The examination of the womb was made by that excellent pathologist, Dr. M. D. Mann, who pronounced the disease to be “villous degeneration of the uterine mucous membrane,” and added, “The specimen is one of extreme interest both clinically and pathologically, no such case having been described by any author with whom I am familiar.”

An analogous case happened in the practice of Dr. Edwin B. Bertolet, of Oley, Pa., to whom I am indebted for the following details:

“During the last three years of her life, the lady had constant bleeding from the womb, at times amounting to an alarming hemorrhage. This occurred several times while the patient was seated at the dinner table. She had sacral pains and uterine tormina, which usually ended in the discharge of clots. Six months before her death she called in Dr. Bertolet, who found the uterine cavity measuring four and a half inches in length. The cervix was free from disease, but the os was patulous, and the endometrium studded with growths which bled freely when touched with the sound. As no treatment proved availing, Dr. P. B. Breinig, of Bethlehem, was called in on January 9, 1878. At this time the uterine cavity measured five and a quarter inches in length. The endometrium was scraped with the curette, and about a tablespoonful of the growths was removed. These were submitted to the *Committee on Morbid Growths* of the Pathological Society of Philadelphia, who ‘were inclined to consider it a cystic papillary adenoma.’† The patient was greatly relieved by the operation. The uterine tormina ceased, and the blood was replaced by a serous discharge, which soiled two napkins daily. But she gradually failed, and died two months after the operation. The post mortem revealed an irregularly shaped womb of the size of the foetal head, the enlargement being principally at the left cornu. The endometrium contained pus, and was covered with shaggy masses which penetrated into the parenchymatous structures. The pelvic viscera were matted to-

* *American Journal of Obstetrics*, January, 1878, p. 133.

† *Philadelphia Medical Times*, April, 1878, p. 354.

gether by old and new adhesions, and a few of the mesenteric glands were enlarged. All the other organs were normal."

Winckel found a womb in the Dresden Museum, unfortunately without clinical history, which he said Dr. Hirschfeld carefully examined, and which, from the description and the beautiful illustration accompanying it, must have been analogous to my first case of this group.* Winckel, from the microscopic and macroscopic examination, called it an *adenoma papillosum diffusum partim polyposum corporis uteri*. Hirschfeld, who confined himself strictly to its histological aspects, gave it the name of cylinder-celled adenoma (*Cylinderzellenadenom*). This specimen led Winckel to think that a case which he had treated at Rostock, and to which he had given an off-hand diagnosis of sarcoma, must have been one of these villous growths. In spite of treatment, the hemorrhagic growth returned, but owing to his removal from Rostock to Dresden, he lost sight of the case. Later, he saw a case in which the disease began within the cervical canal, and, despite all treatment, rapidly descended. In six weeks' time it had invaded not only the vaginal portion, but the vagina as well. As the woman now ceased to attend his clinic, he concluded that the issue was a fatal one. Referring to this case, he says, "The rapidity of return, and the great extent of surface attacked, show that such adenomata are not much behind the most malignant new formations." To this group of adenomata probably belong two cases reported by Matthews Duncan.† In each there was a return of the growth in the uterine cavity, and the general health of each was failing at the time when his paper was read.

Villous cancer of the bladder is not an uncommon disease; but of the cavity of the womb it is either extremely rare, or it has not been recognized. Apart from my cases, and from those reported by Drs. Lusk and Bertolet, and perhaps the two of Dr. Duncan's, I know of none with clinical histories.

* *Die Pathologie der Weiblichen Sexual-Organe*, Leipsic, Lieff. ii., p. 40.

† *Obstetrical Journal of Great Britain and Ireland*, November, 1873, p. 497.

I do not think that the pathological status of these villous growths has yet been definitely settled, and the field remains open to future investigators. The careful autopsy of Dr. Lusk's case, the fatal issue of Dr. Bertolet's case, and the unequivocal history of my first and third cases point to forms of a malignant type. But in my second case there is no appearance of progressive cachexia: on the contrary, the lady has greatly improved in health, and has safely reached the menopause.

With our present light the prognosis of villous growths of the endometrium must of course be a guarded one, and yet not wholly unfavorable. Winckel reports a cure of one, springing, however, from the fore-lip of the cervix; and Professor Kocker, of Berne, avers "that papilloma vesicæ, in the female, has been frequently treated by operative proceedings (through the dilated urethra) and brought to a satisfactory conclusion, and, indeed, been healed."* He further reports a cure of this disease in the male bladder, by opening the urethra on a grooved staff, and then scraping off the growth by a long sharp scoop, bent at an angle. Another case of villous cancer of the female bladder is published by Dr. W. Alexander, who in October, 1877, and in the following May, scraped off the growth with apparently good results;† but time enough has not yet elapsed to pronounce the cure a permanent one. Bryant, on the other hand, asserts that "There is no cure for this affection. . . . The disease usually destroys life in about two years."‡

(c) *SARCOMATOUS DEGENERATION OF THE ENDOMETRIUM.*

To make this lesson more complete, some reference must be made to sarcomatous degeneration of the endometrium. And I wish here to be understood as referring not to sarcoma

* *British and Foreign Medico-Chirurgical Review*, July, 1876, p. 210, from *Centralblatt für Chirurgie*, April 1, 1876.

† *Lancet*, August 17, 1878, p. 209.

‡ *Surgery*, p. 505.

of the parenchyma, which is essentially fibroid in its structure, circumscribed in its growth, and which assumes a tumor-like form from the outset; but to sarcoma of the submucous connective tissue, which begins as a diffuse proliferation, and grows in the direction of least resistance,—viz., into the uterine cavity,—and involves the endometrium. It may, however, secondarily invade the wall of the uterus, either by destructive pressure or by infiltration; but this happens only in its last stages. It consists microscopically of a new growth of small round cells, which, as Jenks, who has written an excellent paper on the subject, has observed,* “are always separated the one from the other by a certain amount of intercellular substance, and are arranged after no definite type, never packed together in alveoli, as is the case in cancer.”

Irregular and profuse menstruation, and intermenstrual leucorrhœa, gradually becoming more and more fetid, are the first symptoms; then pain, when the mass has grown large enough to arouse the resentment of the womb and awaken its contractions. The curette will cause considerable hemorrhage, and bring away many fragments which present the appearance of medullary cancer; but a microscopic examination will infallibly determine this character. If the cervical canal be now dilated and the finger passed in, the uterine cavity will be found filled by an irregular, ragged, and diffuse growth, without a capsule, which breaks down under the finger. Sometimes the womb, irritated by the growing mass into powerful contractions, will force a portion of it into the vagina. It will then assume the form of a polypus, the pedicle of which will be the part constricted by the os uteri. By this constriction the circulation of the protruded portion become impeded. It therefore disintegrates, bleeds profusely, and gives off a very fetid smell. Its diffuse growth, absence of capsule, friability, placenta-like structure to the feel, and, later, its excessive fetor, stamp it with an almost unquestionable macroscopic individuality.

* *American Supplement to Obstetric Journal of Great Britain*, etc., vol., I, p. 116.

The prognosis is an extremely unfavorable one, but the fatal issue is greatly postponed by operative measures. The treatment consists in repeated removals of the growth as fast as it is renewed. This is best accomplished by crushing off the polypoid portion by the *écraseur*, by scraping its base with a sharp curette, and by cauterizing it either by the hot iron or by fuming nitric acid.

I have met with this disease in one typical case:

M. D., aged 45, was, according to her own account, well and regular until June, 1871, when she "flooded" continuously for four weeks. July 4, she called in a physician, who removed a tumor from her vagina as large as her fist. She was now free from hemorrhage until Christmas, when flooding again began. As nothing checked this, a vaginal examination was made, and another tumor found. It was removed by the *écraseur* in February, 1872, and again a third one in the following April. The following June she was first seen by me, and I found a polypoid tumor as large as a hen's egg protruding from the os uteri. It had no pedicle other than the constriction caused by the os, and seemed attached to the whole left lateral surface of the uterine cavity, as far as the finger could reach. Being very friable, it broke down under traction, and was, therefore, removed (July 1) in fragments by fenestrated forceps, curved scissors, and by scraping the uterine walls with the curette and the finger-nail. For nigh two months succeeding the operation, the patient, being put on iron and arsenic, improved astonishingly, and I flattered myself that she was cured; but late in August hemorrhage again returned. In spite, now, of the use of the curette, of intra-uterine applications of carbolic acid, of the silver nitrate, of tincture of iodine, and of nitric acid, repeated alternately every week after the operation, the growth was slowly reproduced. November 2, she passed a large fragment, after severe expulsive pains. On the succeeding day the os was found blocked up by an exceedingly offensive mass, which was removed in fragments and sent to the late Dr. William F. Jenks for examination. He found the growth to be a round-celled sarcoma. The uterine cavity seemed now to be wholly invaded. On the 16th another large mass was expelled, after very severe expulsive pains. She now steadily grew worse, and discontinued her attendance on the clinic of the University of Pennsylvania. Subsequently it was learned that, after being greatly reduced by hemorrhage, and after suffering more or less from severe uterine colics, she died early in 1873.

Another very analogous case I have had verified by microscopic examination; but I have mislaid my notes, and cannot remember the details. A third case, also verified by the microscope, presented itself to the clinic of the University, and I removed the growth. Nothing has since been heard of

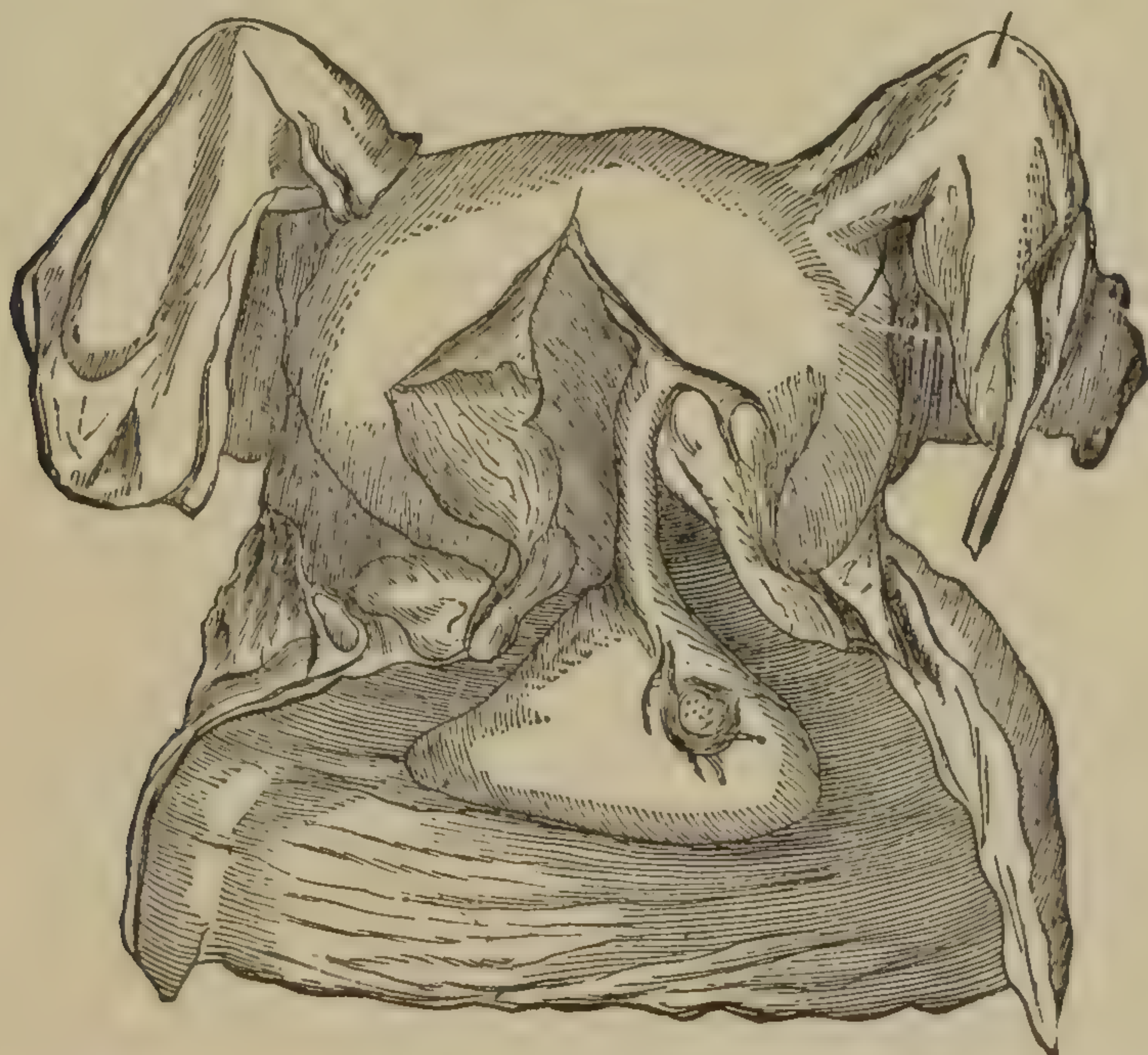
the woman, but she will probably return. I am sure that I saw a fourth case, a patient of Dr. E. L. Evans, and a lineal descendant of one of our Hessian prisoners who settled down on the Neck after the close of the Revolution. She was over sixty, and had been losing blood—a loss which she at first welcomed as a token of returning youth, but she soon changed her mind and sent for Dr. Evans. He discovered the tumor and asked me to see her. I met him in June, 1877, and found a large friable and non-capsulated tumor, exactly as in my first case, protruding from the os. It broke down under traction, and I wrenched off fragment after fragment with a polypus-forceps until its base was reached, which seemed to cover also the whole left lateral surface of the endometrium. This I scraped smooth, and then cauterized with a saturated tincture of iodine which happened to be in my bag. I gave a very unfavorable prognosis; and yet, nine years afterwards, on April 7, 1886,, I saw this woman hale and hearty. She was then seventy-two years old, and had had no return whatever of the uterine hemorrhage. Very unfortunately, I lost the fragments carried away for microscopic examination; and yet I cannot help thinking that it was a case of round-celled sarcoma.

LESSON XXV.

POLYPUS OF THE WOMB.

FOR all practical purposes, a uterine polypus may be defined as a stalked tumor, hanging from the mucous surface of the womb, and partaking of the same histological characteristics as the stroma from which it springs. If it grows from the lining membrane, it will be mucous; if from the

FIG. 88.



FIBROID POLYPUS WHICH HAS BEEN EXTRUDED FROM THE CAVITY OF THE UTERUS, THE TRIANGULAR SHAPE OF WHICH IT RETAINS. (BARNES.)

sub-mucous cellular tissue, it will be fibroid; if from the muscular fibres, it will be myomatous; and if it starts in the glands, as retention cysts, it will form the variety known as the glandular polypus.

Polypi usually occur singly, but I have removed several at one time, from the uterine cavity, which, like gall stones, were flattened on the surface of impact.

The most common symptom evoked by a polypus is hemorrhage; but the amount bears no proportion to the size of the tumor. Sir Charles Locock* reports the death of a woman from uterine hemorrhage, caused by a polypus not larger than a pea. On the other hand, I have seen no excessive loss of blood from one as large as an apple. They bleed more when within the uterine cavity, and less after their extrusion into the vagina. At times the menstrual flux appears at the usual period, but it is profuse; more frequently the interval shortens; then, again, blood may dribble away more or less all the time. Other symptoms are leucorrhœa, vomiting, and expulsive pains, the last two as the result of uterine distention.

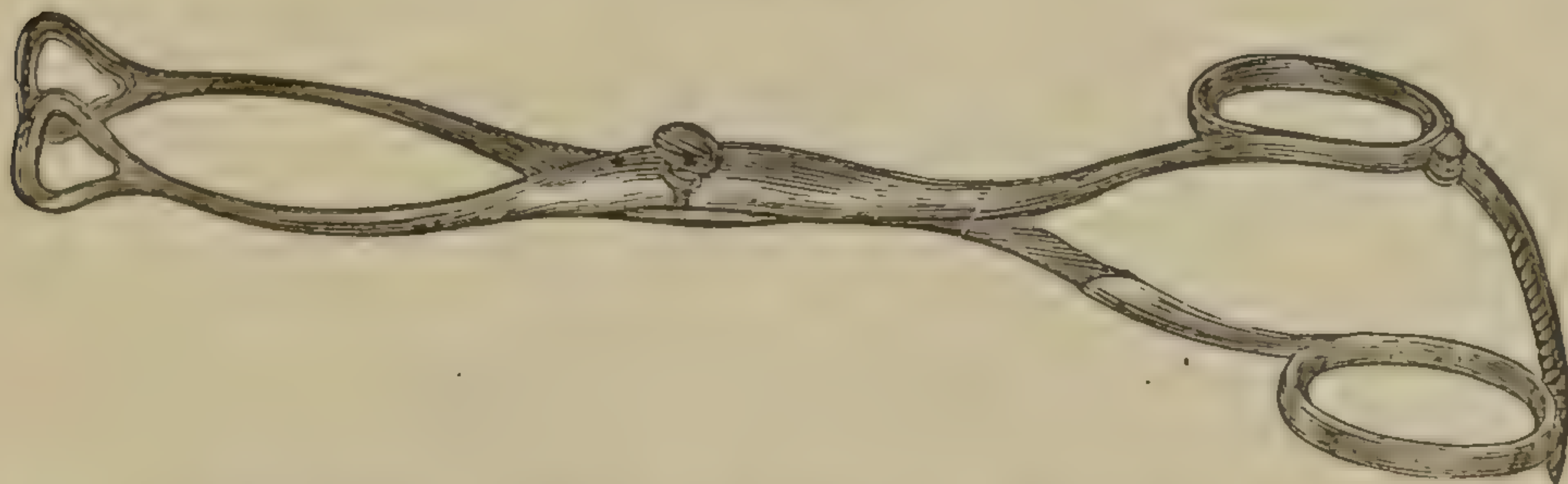
As to the cause of polypus, it is evidently due to perverted nutrition, to an increased constructive energy in the womb; for these are hyperlastic growths, like polypi in the nose. Anything that will cause and keep up an irritation of the uterine structures is competent to create these tumors. What is the most frequent cause of nasal polypus? Catarrh of the Schneiderian membrane. In the same manner an analogous condition in the womb, a catarrh of its lining membrane, will produce a like result. Sterility and single life are pre-eminent factors in the production of these tumors. My experience is, that you will find them to be more frequently the cause than any other factor. But why should they produce them? you will ask. Because the irritation of menstruation continues without any break. Nature never intends that the monthly congestion should go on indefinitely, but she expects such interruptions to it as gestation and lactation usually bring. Another cause, closely relating to the preceding, is perverted sexual relations, which excite and irritate without satisfying. In short, uterine polypi and uterine vegetations start from pretty much the same causes.

The polypus ordinarily met with is the small glandular

* *Medico-Chirurgical Transactions*, vol. xxxi., p. 173.

variety, which appears to consist of one ovule or more of Naboth. In size it rarely exceeds a marrow-fat pea, and is found just within the os externum, or hanging out of it. Since it retreats before the finger into the cervical canal, and thus escapes detection, a speculum should always be used. A bivalve is here the best, because, by making the os gape widely open, it may reveal one so high up in the canal as to be beyond the reach of the finger. From its soft and slippery nature, it eludes the grasp of any ordinary forceps, and, therefore, should be either snipped off with a pair of scissors, or twisted off with a fenestrated forceps (Fig. 89). Any tendency to hemorrhage can be controlled by an application to the stump of fuming nitric acid, or of a red-hot knitting needle.

FIG. 89.



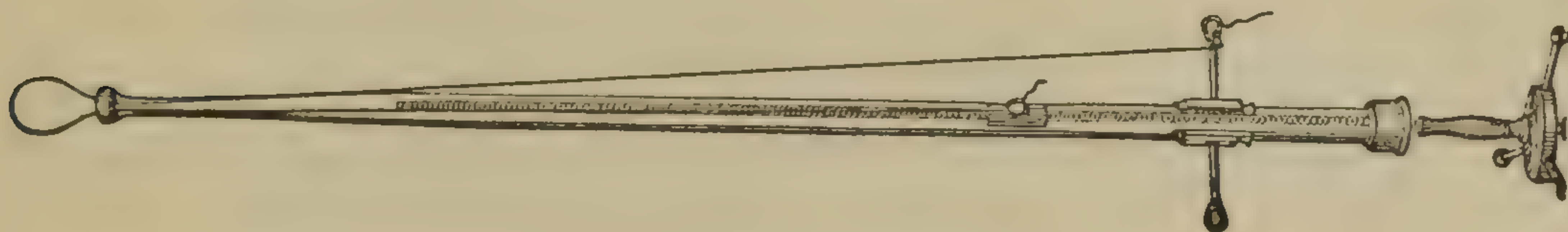
Polypi that start from the uterine cavity grow to a much larger size, and when first discovered by the physician, are rarely smaller than a hickory nut. Varying much in size, they will be found either wholly in the vagina, or partly in the vagina and in the womb, or wholly within the uterine cavity. Whenever they hang loosely in the vagina, or dangle partly out of the dilated os, like the clapper of a bell, there is neither difficulty nor hazard in their removal. They can often be twisted off, but no great force must be used for this purpose, lest the root of the stalk should wrench off a portion of the uterine wall. They can be snipped off with a pair of scissors curved on the flat; or the stalk can be first put on the stretch, and then scratched through with the notched nail of the index finger, just as a blunt knife will sever the strands of a rope when tightly stretched. The safest, and

therefore the best plan, however, is to noose the pedicle with the loop of the *écraseur*. Should the polypus prove so large as to fill up and greatly distend the vagina, it may be impossible to reach the pedicle. In such a case different plans may be pursued, but the tumor must be got away by hook or by crook. One method is, to cut off as large a slice as possible by a very strong wire loop slipped up as high as it will go. On the removal of this slice, the rest of the polypus will descend still lower, so that at a second or a third trial the pedicle will be reached. The risk from hemorrhage is not very great, even when the tumor is of a large bulk. Before the *écraseur* came into use, I once assisted at an operation, in which a very large polypus was removed with a curved pair of scissors. Although the pedicle was not reached until two large slices had been cut off, each after an interval of a week, no hemorrhage requiring a tampon took place.

Another plan consists in seizing the growth with the midwifery forceps, or by two very strong volsellæ, and in dragging it outside of the vulva. The wire loop of an *écraseur* can then be thrown around the pedicle. If this instrument is not attainable, the pedicle can be sawed off by a fine but strong piece of hempen twine, in the same manner as a bar of soap is often cut into uniform pieces. If knotted at two or three points, the twine will sometimes cut better. Either method reduces the risk of hemorrhage to a minimum, but the knife can very generally be used with impunity. As these very large tumors often spring from the cervix, care must be taken to follow down the reflected fold of the vagina upon the cervix, so as not to apply the twine or the wire so high up as to include a portion of Douglas's pouch. One hint in regard to the wire *écraseur*: Whenever no great power is needed to cut through the noosed pedicle, each end of the loop may be fastened to the traveling button. But when the object to be cut off is large, the one end of the loop should be fastened (as represented in Figure 90) to one of the immovable bars projecting from the shaft near the handle, and the other end twisted around the traveling button.

Since only one end of the loop now travels, the movement is slower, but the half-sawing and half-crushing action thus gained greatly diminishes the resistance, increases the power, and lessens the chance of having the wire snap. The only

FIG. 90.



WIRE ECRASEUR.

objections to this adjustment are the slowness of the movement, and the liability of the button to come home before the stalk has been wholly cut through.

A few words about the wire to be used will not come amiss. From long experience, having first used ordinary annealed wire for this purpose, which often annoyed me by snapping at the critical moment, I have finally been led to use exclusively pianoforte wire for the *écraseur*. For years I have used nothing else than this excellent steel wire, made for the high notes of the piano. You will need wire as strong as you can get it, for you will be astonished at the resistance it meets in cutting through the structures of a fibroid polypus.

Inversion of the womb being a very rare accident, is for this reason very liable to be mistaken for a polypus. When a polypus, partly projecting from the uterine cavity into the vagina, has contracted adhesions with the margin of the os, the diagnosis between it and an inversion of the womb may be very difficult. Sometimes the womb is partly inverted by a polypus, and the inverted portion may be mistaken for the pedicle. To make out this diagnosis, remember, first, that, unless directly after labor, the tumor of an inversion is scarcely larger than the non-gravid womb. Hence, a voluminous tumor distending the vagina cannot be simply an inverted womb. Next, pass up the sound, and if it indicates a length of two inches and a-half, or more, beyond the edge of the os, the tumor is not an inverted womb. If it cannot be made to

enter more than an inch, the womb is probably partly inverted. If neither cervix nor uterine cavity can be discovered, and the tumor is not larger than the non-gravid womb, it is very likely to prove an inversion of the womb. To confirm the diagnosis, give ether, pass up the index finger, or even half of the hand, into the rectum, and try to reach above the tumor. If inversion be partial, a cup-like depression, like the bottom of a bottle, will be found where the fundal vault should be. If inversion be complete, the womb, will be absent from its accustomed site. Sometimes, however, in spite of these methods, the diagnosis will still be doubtful. Withhold now the ether and stab the tumor with an acupuncture needle. If the woman flinches, it is the womb, and not a polypus, for the latter is not sensitive. Again, to make sure of no error in this matter, withhold all anæsthetics, and tighten the loop of the *écraseur* very slowly. If now the woman complains of great pain, some portion of the womb has been noosed. Hence, in doubtful cases, the inference is plain never to use anæsthetics while the pedicle is being cut through.

When a polypus, starting from the fundus, contracts adhesions with the margin of the os, these must be broken up by the fingers, or cut through with the scissors, before the true pedicle can be reached. The tapiroid cervix, adverted to under the subject of prolapse, may be mistaken for a polypus. But as the remedy in each is the same, no harm will accrue from a false diagnosis. The tale told by the existence of an os externum, and of a uterine cavity, should never permit a completely prolapsed womb to be mistaken for a polypus.

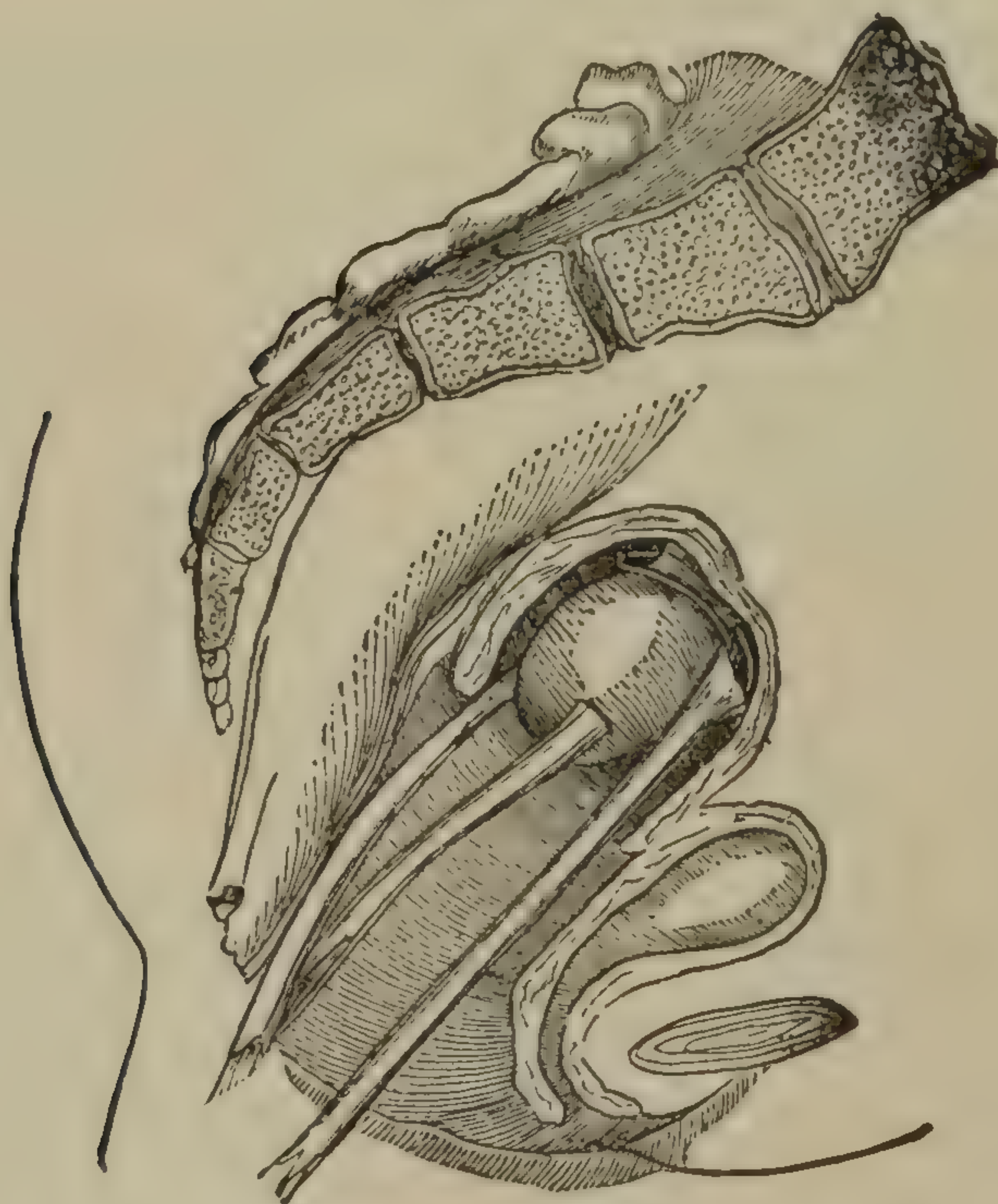
The intra-uterine polypi are by no means so easily disposed of as the other two varieties. The first difficulty in the way is to discover the growth : for it may be so small as not to enlarge the womb appreciably ; the cervix may not be effaced, or the os dilated ; or the sound may impinge upon the polypus, and deceive the physician by a short measurement. Since the most prominent symptom is hemorrhage, the first thing to be done, when this persists, is to explore the uterine

cavity with the finger. For this purpose the canal of the cervix must be dilated by tents, and in the manner previously described ; due heed being paid to the caution, given in a preceding lecture, of effecting this dilatation, if possible, with but one batch of tents. This method of gaining the cavity of the uterus will not, however, always be needed, and here is a hint worth remembering : During the catamenial flux, the temporary increase in the bulk of the tumor, through congestion, together with the resulting labor-like pains, so opens up the canal as often to permit the passage of the finger. Some polypi have actually appeared in the vagina during the period, and have afterwards been so withdrawn into the uterine cavity, as to escape detection at a subsequent examination. This fact should be explained to the woman, else her innate feeling of delicacy would cause her to shrink from an examination at such a time.

An intra-uterine polypus having been discovered, how is it to be removed? By adopting the following plan, somewhat modified from that of Dr. Kidd, of Dublin, I have not yet been foiled: The woman is first etherized, and afterwards brought in the dorsal decubitus to the edge of the bed, where each knee is supported by an assistant. The operator now seizes the anterior lip of the os with a volsella, draws the womb down as low as possible, and then entrusts the instrument to one assistant, with the injunction to hold it steady. Meantime the other assistant renders efficient aid, by keeping up a firm supra-pubic pressure upon the fundus. The operator next introduces the index finger of his left hand into the uterine cavity, and by it as a guide seizes hold of the polypus with a second volsella. He now tries to twist the tumor off, but, for reasons previously given, with no great force. Failing in this, he, in order to gain more room in the vagina, removes the first volsella, and then slips the wire loop of an *écraseur* over the handles of the second. This volsella is put into the hands of an assistant, who makes firm downward traction with it, while the operator proceeds to slide the loop up beyond its claws and over the equator of the polypus. The

easiest way to do this, as I have found by much experience, is to bend the loop back, and let the tip of the *écraseur* enter the womb first. The latter must be pushed up as far as it will go, and the wire then coaxed up by the fingers. When the pedicle is reached, the operator draws in the slack of the loop, but before tightening it, causes the traction of the volsella on the polypus to be relaxed, and then pushes up the fundus of the womb with the shaft of the *écraseur*. The object of this manœuvre is, not only to restore the vault, or fundus, of the womb if it has been partly inverted and cupped, like the bottom of a bottle, by the traction on the polypus, but also to get the loop close up to the root of the pedicle. A few turns of the windlass in the handle of the *écraseur* now cut off the polypus, which, being still held by the volsella, is

FIG. 91.



OPERATION FOR REMOVING POLYPUS UTERI BY WIRE ECRASEUR.—THE POLYPUS IS SEIZED BY THE SECOND VOLSELLA AND NOOSED BY THE WIRE LOOP. (BARNES.)

finally extracted (Fig. 91). In like manner may the projecting portion of a submucous fibroid be shaved off flush with

the uterine wall. The remaining portion is then usually expelled later by the process of spontaneous enucleation. Should the physician not possess an *écraseur*, he may, perhaps, be able to scratch through the pedicle with the notched nail of his index finger or with Thomas's serrated spoon. Or he may sever it either with a curved and probe-pointed bistoury, or with a long pair of scissors curved on the flat. Sometimes he may be able to saw through the pedicle, by a piece of twine carried up and worked by means of Gooch's double canula.

A polypus once removed never returns, but a second one, dwarfed by the pressure of the first, may now rapidly grow. There is, however, that growth of peculiar malignancy—the round-celled sarcoma—often referred to by writers under the name of “recurrent fibroid—” which may deceive the physician into the impression that he is dealing simply with a polypus, and lead him to give, as I once did, a favorable prognosis. It bleeds very freely, emits a very bad odor, has no capsule, and feels much like placental tissue. The structure is so friable as to break down with very slight traction. The constriction of the portion protruding from the os gives the idea of a pedicle; yet on following it up with the finger, it will be found to have no circumscribed uterine attachment, but to lose itself in an analogous intra-uterine mass. It greatly resembles a polypus, but the diagnostic points laid down in my last lesson, ought to keep you from making any mistakes in its recognition.

In the remaining brief moments of my hour with you, I purpose to consider in a few words some special points in the treatment of polypus. Suppose a woman is pregnant, and comes to your office with one dangling in the vagina, should you remove it or not? My advice is, during the early months of gestation, to let it alone; even if it be only a small one on the cervix, not larger than a pea, do not touch it, and more especially if it be large. The irritation following its removal may lead to a miscarriage. Wait for four months to elapse, when the vulnerability of the pregnant womb will be less, and then you can remove it with comparative safety. You

should always remove them, because their presence may interfere with labor, or they may slough from injury received during labor. For the same reasons, if a polypus be first discovered during labor, put on the *écraseur* and remove it at once, before the child is born. But if, after labor is over, you discover a polypus within the uterine cavity, it is not easy to lay down an inflexible rule of procedure. I once lost a patient six weeks after labor, from the breaking down of such a tumor, and I should therefore prefer to attempt its immediate removal, if the operation promised to be an easy one; but this course is as yet mooted.

There is another point which I shall illustrate in this way: A married lady comes to you with a history of dysmenorrhœa and of sterility, which has lasted some ten or twelve years. She finds that the dysmenorrhœa has gone on increasing, and she lately has suffered from menorrhagia, and has had to go to bed at the time of her monthlies. In such a case the first thing is to insist upon a thorough examination, and not to jump to any conclusions arrived at by a mere digital exploration. For, although these symptoms generally point to a flexion of the womb, this is not always the case. For instance, in a case of this kind, I found that the patient had been for two years under the care of several practitioners, who had never made an intra-uterine examination. I first made a digital exploration, and found a retroversion, rather than the flexion which I had expected to find. The womb was not much displaced, but sufficiently so to give rise to some of the symptoms. The sound went in without difficulty, and I therefore attributed the dysmenorrhœa to periodic thickening of the mucous membrane, brought about by a long continued leucorrhœa, and reinforced by the congestion at the menstrual periods. I scarified the cervix with the bistoury, without relief. I enlarged the canal with the hysterotome, but no improvement followed. It was only after dilating with sponge tents that I discovered the cause, for, on removing them the next day, I found entangled in their meshes a beautiful fibrous polypus, as perfect in its form as an ear-drop. Acting like a ball-

valve in the cervical canal, it had caused the dysmenorrhœa by impeding the discharge of the menstrual fluid, and the sterility by preventing the seminal fluid from entering the womb.

Thus you see that these little cervical tumors, or the retention cysts of the glands of Naboth, may escape careful exploration, and you must sometimes make a diagnosis by exclusion. To confirm your suspicion you should take a sponge-tent as large as you can, and crowd it into the canal. A laminaria tent will not answer so well, as it has no meshes. If you choose, you can previously stretch open the os with a dilator. In removing the sponge the next day, you may be rewarded by finding, entangled in its meshes, some small polypus or some fungous growths. Therefore, when such cases present themselves to your notice, carefully examine the sponge-tent after you have withdrawn it; otherwise, you will be at a loss to explain the sudden improvement in your patient. On the other hand, I have twice seen an intra-uterine polypus of some size broken off from its attachment, by the use of a fagot of tents, and left behind loose after their withdrawal. In each case, my surprise was great to find it come away without any traction.

In order to avoid, as much as possible, the use of tents, which is a slow, painful and hazardous procedure, I have of late years been resorting to the uterine dilator. For instance, in a case of suspected intra-uterine polypus, the cervical canal is stretched open by the dilator so as to admit a small fenestrated polypus forceps. The polypus is then caught at hap-hazard, like a stone in the bladder, and twisted off. I have, over and over again, had less difficulty in catching the polypus and twisting it off, than in subsequently removing it through the narrow canal.

In conclusion, whenever you discover a polypus, remove it the best way you can, either whole or piecemeal; but remove it by one operation, if possible, and not by repeated ones. Also, always remember to disinfect the vagina before the operation, and the womb and vagina after the operation—preferably by the mercuric bichloride.

LESSON XXVI.

FIBROID TUMORS OF THE WOMB.

FROM the numerous opportunities which this clinic affords, you have long since discovered that the womb is more subject to benign, and perhaps to malignant, growths, than any other viscus of the body. These organic affections it has been my purpose to take up in order; and I shall therefore end, this morning, with the fibroid tumor, as the last one of the series, and the one most commonly met with.

The statistics on this point would be very startling, were they not somewhat contradictory. Thus: Mr. Pollock, the late Curator of the Museum of St. George's Hospital in London, reports* that, during a period of ten years, out of 583 women dying in the hospital of various diseases and at different ages, 39—seven per cent.—were found to have fibroid tumors of the womb; and that only one of these women was under the age of thirty. Dr. Oerum found in the record of 1002 autopsies of female bodies of all ages performed in the city hospitals of Copenhagen, 53 cases with uterine fibroids, or 5.3 per cent. Under twenty years of age there were 294 cases, and not one had a fibroid. From the ages of twenty to twenty-nine years, there were 149 cases, and of these but one had a fibroid. Of 147 cases between the ages of thirty and thirty-nine, there were six with fibroids. Of 131 cases between forty and forty-nine, thirteen had fibroids. Of 101 cases between fifty and fifty-nine, fourteen had fibroids. Of 96 cases between sixty and sixty-nine, ten had fibroids. Of 51 cases between seventy and seventy-nine, eight had fibroids. Of 8 cases between the ages of eighty and eighty-nine, one had a fibroid. Out of 25, whose ages were unknown, there

* *Lancet*, February 7, 1852, p. 155.

were none with fibroid tumors. It appears then, from Dr. Oerum's statistics, that, under the age of thirty, fibroid tumors of the womb are rare ; and that they occur in twelve per cent. of all women over forty years old.* On the other hand, Bayle states† that these tumors are present in twenty per cent. of all women over thirty-five years old ; and Klob‡ that "undoubtedly forty per cent. of the uteri of females who die after the fiftieth year contain fibroid tumors." Here is an apparent want of harmony ; but it can, in a measure, be explained, if we consider, firstly, the fact established by these statistics, that age is a predisposing cause ; and secondly, the circumstance that these averages are based upon varying ages—viz., upon different degrees of liability. Yet, while admitting the frequency of this disease, I believe that Bayle's and Klob's estimates, from not being based on autopsic statistics, are altogether too high, and that their source of error lies in the promptness with which advice is sought by women thus afflicted. It is a curious fact that one or more of these fibroids will be found not only in the majority of middle-aged colored women, but—what is rare in whites—often enough in black and mulatto girls barely over twenty years of age. Between the two races there exist other marked differences, which you will do well to remember. Thus, ovarian cysts and cancerous affections of the womb are extremely rare in colored women, while keloid growths are common enough.

Globular in form and dense in structure, the fibroid tumor varies in size from a boy's marble to a boulder taking up more room than a child at term, and weighing 30, 40, 60, and even 100 pounds. You will find it stated that it is seldom solitary, but gregarious,—two or more being usually present. From my own observations, however, from those of Fordyce Barker,§ and also from the statistics of Mr. Pollock,—who found that, out of 39 cases, 21 had single tumors,

* *American Journal of Obstetrics*, April 1879, p. 445.

† *Liverpool Medico-Chirurgical Journal*, vol., i. p. 61.

‡ *Pathological Anatomy of the Female Sexual Organs*, Am. ed., 1868, p. 177.

§ *Am. Med. Monthly*, 1857, p. 143.

—I am inclined to think that single and multiple tumors are about equally divided. True, an examination during life will often convey the sensation of two or more tumors; but, after death, these will usually be found to be the irregular bosses or excrescences of a parent tumor. Whenever multiple, they are, as a rule, outgrowths from the peritoneal surface of the womb; and one of them then diverts the blood to itself, and increases in bulk far more rapidly than the other. Should two happen to start together from under the mucous lining of the womb, the stronger one will before long grow at the expense of its fellow, and may even obliterate it.

In its early history, a fibroid tumor exhibits a simple increase of nutritive activity at some point in the muscular layer of the uterine wall. To all intents, it is nothing more than an exaggerated development of unstriated muscular fibres, bound together, like those of the uterus, with connective tissue, and is in fact a *myoma*—that is, a muscular tumor. Its histological resemblance to the womb is so striking that, even after full development, a shred taken away from it may not be distinguishable, under the microscope, from one removed from the hypertrophied but unimplicated portion of the womb. If, however, from each a slice—a topographical section, as it were—be taken, and the structure of the one as a whole be compared with that of the other, in the uterus there will be seen a significant order in the disposition of its fibres; in the tumor, a purposeless jumble. Growing by an independent proliferation of its own cells, a fibroid neither infiltrates adjacent tissues nor becomes intimately incorporated with them; but, as it increases in bulk, it simply displaces them by crowding them away on every side. The connection between it and the uterine stroma consists merely of delicate vascular filaments from its areolar capsule, which are so frail that, unless some inflammatory action has glued the tumor to its nest, it may be shelled out as easily as a ripe orange can be peeled out from its rind.

Unlike malignant growths, fibroid tumors very rarely begin in the cervix uteri, but at some point above the os internum;

nor are they found in the anterior wall so frequently as in the posterior. Their growth, being in the direction of least resistance, is determined by the stratum of uterine tissue in which they happen to start. Thus, if one has its site in the centre of the uterine wall, it will bulge as well into the uterine as into the abdominal cavity; but more into the latter, because the resistance in that direction is less. If it starts from a point nearer to the mucous lining, it will project into the uterine cavity. Should it take its origin from the muscular layer under the peritoneal investment, it will grow out of the womb into the abdominal cavity. Now, since this accident of position gives variety to the symptoms of uterine fibroids, graduates the intensity of suffering, and modifies their prognosis and treatment, it has very appropriately been chosen as the basis of their classification, thus:

(a) *Sub-peritoneal, sub-serous, extra-uterine, or surface* fibroids, are those outgrowths from the womb which project into the abdominal cavity and carry before them a fold of peritoneum.

(b) *Interstitial, parietal, intermediate, or intra-mural* fibroids, denote those which are imbedded in the uterine wall, and are covered on all sides by uterine tissue.

(c) *Sub-mucous, intra-uterine, or cavity* fibroids, are those ingrowths into the uterine cavity which start from that stratum of uterine tissue nearest to the mucous membrane, and are covered by this membrane.

The prime cause of these growths is perhaps unknown; but they undoubtedly increase under the stimulus of undue uterine congestion. Sexual intercourse always aggravates their symptoms, and marriage is pretty sure to start the growth of one hitherto dormant. Sterility is undoubtedly a predisposing cause, and so is single life—because, from this point of view, both old maids and barren wives suffer from the congestion due to uninterrupted catamenia; and the latter, in addition, from that of unfruitful sexual excitement. Reamy's elaborate statistics of uterine fibroids show that the age of greatest liability is between 30 and 40, and "that old maids

are first in rank of susceptibility, sterile married women second, and fruitful women third.”*

The proliferation of connective tissue-cells, determined by the congestions and extravasations of dysmenorrhœa, is advanced by some writers as a common cause. This opinion is strengthened by the striking fact that dysmenorrhœa is the frequent antecedent of chronic metritis—a disease in which the structure of the thickened wall resembles so much that of a fibroid nodule, that it is hardly possible to tell them apart. Further corroboration of the congestion-theory is gained by the circumstances, that fibroids rarely appear before the age of thirty, and never before puberty; that the period of their greatest activity corresponds to the period of greatest menstrual activity; that after the menopause they usually cease to grow, and sometimes shrink away; and finally, that during the catamenial flux they temporarily so increase in size as often to cause dysuria and other pelvic disturbances. Other causes of these tumors undoubtedly exist. After the stretching and weakening of uterine fibres by repeated pregnancies, these fibroids have been observed to start at points where the involution has been imperfect.

Subjective symptoms are not always evoked by the presence of a uterine fibroid, but when present they are manifold, and yet not so diagnostic as to do more than to arouse a suspicion, confirmable only by a physical exploration. In the usual order of their sequence, menorrhagia will first appear, or the intervals between the catamenia will shorten. Next will be added dysmenorrhœa and uterine colic,—for, during the menstrual flux, the tumor swells up to such a bulk as to arouse the expulsive efforts of the womb. Metrorrhagia, alternated by a copious leucorrhœa, will then set in, and rapidly weaken the woman, who will now be worried by reflex uterine symptoms, such as nausea, headache, cardialgia, and palpitations. Finally, as the fibroid increases in size, there will follow a train of symptoms owing to the mechanical effects of pressure on the pelvic organs, vessels, and nerves. This consists of

* *American Journal of Obstetrics*, August, 1886, p. 818.

dysuria, vesical catarrh, difficult defecation, hemorrhoids, and of œdema, varices, and cramps of the lower extremities. The objective symptoms are far more distinctive, but, as they are modified by the site of the tumor, their consideration must be embodied in the history of each variety:

The *sub-peritoneal* fibroid grows more rapidly and attains a greater bulk than either of the other two varieties. Although of stone-like hardness, and nodulous, it yet begets symptoms less exacting than those of the others, and rarely destroys life. I think, however, that, on the whole, it gives more pain than the other varieties. Its attachment to the uterus, at first broad and sessile, often becomes constricted and elongated into a pedicle, long enough to permit great mobility in the cavity of the abdomen, almost independent of the movements of the uterus. Sometimes, through some rude fall or sudden succussion, the stalk snaps, and the fibroid will then roll about at large in the abdominal cavity. This severance from the womb is not followed by the death of the fibroid, for, like a loose cartilage in the knee-joint, or like a foetus escaped from a rent in the womb or from an extra-uterine cyst, it will retain its vitality indefinitely—in one recorded case, as long as fifty years. Again, it will be found separated from the womb and attached to other organs. In such situations it is easily recognized as a parasite by its histological characters—its uterine origin being plainly indicated by the presence of organic muscular fibre. This transplantation is brought about in two ways: By inflammation, the peritoneal investment of the fibroid contracts adhesions to that of the abdominal wall, or to that of some movable viscus, as the bladder, the intestines, or the rectum, which, by its contractions, dilatations, or movements, so lengthens out the pedicle as to break it. Or the fibroid may glue itself to a fixed point, such as to some part of the pelvic tissues; and afterwards the condition of pregnancy or the growth of an intra-mural tumor, by causing an increase in the size of the uterus, puts the stalk to a stretch which it cannot bear. In one case, related by Simpson, the uterine contractions after labor broke the pedicle of a fibroid,

which had become attached to the walls of the abdomen during the last months of gestation.

If the pedicle of an extra-uterine fibroid be long and narrow, the uterus will not usually increase in size; indeed, it may take on atrophy. Upon external palpation, conjoined with a vaginal examination, there will be found in the cavity of the abdomen a movable tumor of apparently large size. But, in estimating the size of an abdominal tumor, remember that it always seems larger than it really is, because the fingers grasp not only the tumor, but also a double thickness of the abdominal walls. Due allowance must be made for this; else, the fatter the woman the larger will the tumor be deemed. A good way of estimating the amount of this error, is to pinch up a fold of the abdominal wall between the thumb and forefinger, and then to subtract its thickness from the apparent diameter of the tumor. Should the displacement of the tumor communicate motion to the handle of a sound passed up to the fundus, a uterine attachment may be safely inferred. When firmly grasped, its stony hardness and the absence of any sickening pain will exclude the idea of its being an enlarged ovary. As a rule, a sub-peritoneal fibroid does not distress the patient by any very irksome symptoms. Yet I have seen one cause excessive suffering, and also fatal dropsy from its pressure on the blood-vessels. A pedunculated one may lodge in the retro-uterine space, and give rise to much pelvic disturbance; but, before attaining any great bulk, it will usually work up out of the pelvic cavity and perch on the brim. Unless, then, the rectum or the bladder is inconveniently pressed upon, its discovery by the women is almost always accidental—often enough not until it has grown to a size double that of the fist.

This patient, S. R., thirty-five years old, has been twelve years married without ever conceiving. Although her left lung contains a large cavity, and her strength is much spent by pulmonary hemorrhages, she has, in great alarm, come a distance of over a hundred miles to consult me about an abdominal tumor, which she, by the merest chance, discovered

a week ago only. Several of you examined her in my private room, and found two nodulous growths squatting upon the surface of the womb, and one tumor, as large as an orange, floating about in the abdominal cavity. The uterine cavity measures three inches, but the additional half-inch is due to the two sessile outgrowths, and not to the floating tumor, which is moored to the womb by a long and slender stalk. These facts were determined by the extreme mobility of the tumor, and by the distance to which it had to be pushed over to one side before any motion was imparted to the handle of the sound. To the gentlemen who examined her, it seemed strange, that neither uterine nor pelvic symptoms had been awakened by the presence of such large foreign bodies. But the truth is, that none of these tumors have crowded her pelvic organs; and, further, that her catamenia have been long suppressed by the constitutional effects of her lung-disease. On the other hand, I have hardly succeeded in convincing her that her chest-trouble is by far the more serious one; and she returns home to-day somewhat dissatisfied that my treatment is limited to arsenic, iron, and cod-liver oil.

This, gentlemen, is a very instructive case, because you will often meet with such in practice. Nothing unnerves a woman more than the discovery of a tumor in her abdomen. By sheer brooding I have seen one lady become insane, and another go into a decline. You must, however, be on your guard against imaginary tumors—phantom tumors, we call them—which women have a knack of finding in their bellies. Whenever you are consulted for any kind of uterine fibroid, tell your patient, as I now tell this woman, that it never degenerates into cancer, and very rarely grows rapidly; that it is not an ovarian cyst, that it seldom proves fatal, and that, even when large, it is not often inconvenient unless from its weight. Calm her fears with the hope that, after the climacteric, her tumor may shrink away, and perhaps wholly disappear. The stoppage of the menses in the woman before you will probably prevent any further increase in the bulk of her tumors; but, then, on the other hand, it here imports

extensive disease of the lungs. She leaves us, as you see, more light-hearted than when she first came, but still not altogether satisfied. Before another patient is admitted, let me point out to you one error in my treatment of this case: I ought to have prescribed a mental salve in the shape of some local application to the abdomen. Sick adults, like children, often need humoring; and he is often the most successful practitioner who knows when and how to humor.

When the fibroid is *interstitial*—that is, imbedded in the uterine wall—it will be attended by an hypertrophy of the whole uterus, but more especially of that portion of its muscular layer which forms the nidus. There will also be a corresponding enlargement in the uterine blood-vessels, which will sometimes emit a sound very like the “placental bruit.” The “placental bruit” of pregnancy is wrongly so-called, for the sound is owing less to the circulation of the placenta than to that in the enlarged uterine vessels at its site. The louder the bruit, then, heard over a fibroid tumor, the thicker is that layer of uterine wall between it and the ear—a fact of great importance in establishing a diagnosis. The mucous membrane becomes vividly red, and it thickens, but never to the production of a decidual lining, as in intra-uterine or extra-uterine foetations. Turgid veins traverse it, and a sanguinolent mucus bathes it. The uterine cavity, rendered tortuous and rigid by the bulging-in of a nodulous tumor, cannot usually be measured by the ordinary sound; but this flexible one of annealed silver will commonly adapt itself to the irregularities of the track, and pass up to the fundus. Should you be baffled in an exploration by either of these metallic sounds, you have in reserve a plan devised by the late Marion Sims: A No. 6 bougie, stiffened by its wire and slightly curved at its tip, is fairly introduced within the os uteri; in order, now, that the wire should not further advance, its ring is firmly held in one hand, whilst with the other the bougie is pushed up into the cavity. By this manœuvre the vaginal portion only of the bougie is kept stiff, whilst the uterine portion, remaining pliant, moulds itself to

the distorted uterine cavity. According to the size of the fibroid, the sound will then pass up a distance of from three to seven inches; but it should be used with great gentleness, as its passage is very likely to provoke a hemorrhage.

An interstitial fibroid may in time be forced toward either the abdominal or the uterine cavity, becoming extra-uterine or intra-uterine, as the case may be. This is brought about by the continuous peristaltic action of the uterine walls, which in health serves to clear out the mucous and menstrual secretions. In this manner also an originally submucous fibroid may be converted into a true fibroid polypus. But it is doubtful whether, as has been contended, an imbedded fibroid ever becomes polypoid in character without first losing its mucous or its muscular investment,—that is to say, without the process of spontaneous enucleation. The vitality of the interstitial fibroid is of a lower grade than that of the two other varieties; at least so it seems to me, from the way in which it behaves. It is less able to resist disturbing influences, and therefore the more frequently undergoes structural changes. It does not itself often inflame, but its serous investment is liable to attacks of inflammation, resulting sometimes in pelvic or even in general peritonitis. Bearing this in mind, you will not handle them roughly, nor needlessly dilate the cervical canal with tents. In my experience, these attacks of localized peritonitis have usually taken place during or just after the flow of the menses, and I have therefore thought, that they could sometimes be attributed to the escape, into the peritoneal cavity, of the contents of a mature ovisac. For the bulk of the tumor may so disturb the relations of the pelvic organs, as to make it impossible for the fimbriated extremity of the oviduct to grasp the ovary.

The functions of a womb encumbered by one of these fibroids become disordered. Pregnancy rarely takes place, and when it does, usually ends in an early abortion. This small bottle contains a three-months embryo, which was expelled from a womb with a large fibroid in its posterior wall. Even after a clean delivery, the oozing of blood was so alarm-

ing as to demand the use of the tampon. The cause of this abortion was probably the unequal development of the uterine walls.

The earliest and most marked disturbances produced by this kind of fibroid are, however, in the catamenia. These grow more and more abundant; they will perhaps anticipate the natural time, or become metrorrhagic. Luckily, these symptoms are not so violent as in the next variety—the submucous. This rule is, however, not a constant one, for here is an exception to it: This patient, Mrs. S., aged forty, and the mother of six children, is almost exsanguious from a ceaseless oozing of blood, which arises, I find, from a uterine fibroid as large as a child's head. Four years ago she miscarried, with much flooding, and she has since run the gauntlet of menorrhagic and metrorrhagic attacks, while the womb has been slowly and steadily increasing in size. The flexible sound passes up a distance of six inches in front of the tumor, which is therefore in the posterior wall, and its passage very decidedly increases the hemorrhage. The cervix is not effaced, but abruptly projects from a stony hard body; it feels much like the nipple of a breast greatly engorged with milk. The pelvic cavity seems blocked up by a dense and an immovable tumor, quite smooth in the vagina, but studded with nodules on its supra-pubic aspect. Defecation is difficult, and the efforts to empty the bladder painful and frequent. Upon auscultation, a very distinct murmur is audible over the whole uterine body. The length of the cervix, the great size of the tumor, and the bosses on its abdominal surface, lead me to think that it is an interstitial fibroid, although the excessive catamenial flows, and the intercurrent hemorrhage point rather to a submucous fibroid. To arrive at a correct diagnosis, and also to lessen the waste of blood, I shall dilate the cervical canal with sponge tents.

When the fibroid is submucous, the uterus enlarges as in pregnancy; the cervix becomes shortened and oftentimes effaced; while the os is likely to be found ring-like and open. Prominent among the symptoms will be pelvic pains and

uterine cholic. The functional disturbances will be greater, and the local congestion more intense, than in the preceding variety. Hemorrhage, and that in excess, will rarely be absent. The sound will penetrate to a depth greater, in proportion to the size of the tumor, than in the interstitial. In short, all its symptoms are commonly more exacting and more marked than those of the other two. But no great stress must be laid on their intensity as a means of diagnosis, for this relation does not always hold good. In fact, I have seen interstitial fibroids exhibit very urgent symptoms, whilst those of a submucous growth have been hardly appreciable.

Hitherto I have tried to point out the distinctive features of the three kinds of fibroids; but there are certain characteristics common to all. After they have attained to the size of a hickory-nut, displacements of the womb follow. By reason of its increased weight, not only will that organ descend bodily in the pelvis, and thus become prolapsed and even procident, but it will also bend over and double up, producing flexions of that wall on which the growth is seated. Ante flexion causes hardly more than vesical irritation; but a retroflexed womb, by pressing upon the sacral nerves, the rectum, and the neck of the bladder, gives very great annoyance. Sometimes, as the tumor grows and begins to impinge either upon the sacrum or upon the symphysis pubis, the fundus of the womb is pushed over to the opposite side and the flexion is reversed. Thus, a fibroid nodule in the anterior wall first brings about an ante flexion; but, its growth in that direction being repelled by the pubic bones, it pushes the fundus of the womb away from the symphysis, and tilts it over into Douglas's cul-de-sac. At times the womb is so displaced that its os is with great difficulty reached. In such cases, it will be usually found, by squeezing the finger well up between the tumor and the pubic symphysis.

Like the gravid uterus after the fourth month—but being solid by no means so uniformly—a fibroid, when too large for the pelvic cavity, tends to rise up above the brim, dragging

the womb with it. The os will then be found higher up, often indeed beyond the reach of the finger. This ascent of the tumor is followed by a great mitigation of all those symptoms produced by pressure. Sometimes, however, by neglect it becomes impacted, or else, by the irritation of confinement in the pelvic canal, it inflames and contracts adhesions to surrounding tissues. It cannot now ascend, but soon blocks up the pelvic canal; first crowding upon the neck of the bladder, so as to render the introduction of the catheter difficult and even impossible; next, flattening the rectum to a ribbon, and otherwise producing the most formidable symptoms. The reason why vesical disturbances precede those of the rectum, are that the bladder, being in the conjugate—viz., the shortest—diameter, and abutting on the pubes, can hardly escape from being nipped; whereas the rectum not only lies in the oblique diameter, and hugs closely the hollow of the sacrum, but also is further protected from pressure by the promontory.

The situation of a fibroid, rather than its size, will often modify the character of the symptoms. Thus, quite a small interstitial one at the internal os makes the cervix crescentic, the fibroid occupying the concavity. In these cases, the stricture thus induced causes sterility and distressing dysmenorrhœa, and usually the introduction of the sound will be found difficult. One of our patients thus afflicted promised to be here to-day; but she has not kept her word. Those of you who have examined her will recall the case. She is twenty-five years old, four years married, sterile, and was a martyr to agonizing attacks of dysmenorrhœa. I found the womb ante-flexed, as it generally is in virgins and in nulliparous women, and the cervix hook-shaped from a fibroid not larger than a boy's marble, situated at its junction with the corpus. I never had a case in which the introduction of the sound gave me more trouble; indeed, it was only by straightening out the crooks and turns of the canal by very firm traction on the anterior lip with a tenaculum, that I succeeded at all. I anticipated a great deal of difficulty in treating this case; but, to my agreeable surprise, by dint of forcible dilatation, by re-

peated scarifications of the cervix, which was much congested, and by the local application of a saturated tincture of iodine, she is now greatly relieved.

During the period of menstrual life, nature rarely interferes with these fibroid tumors, and a spontaneous cure is then hardly to be expected. They slowly increase in bulk until the change of life, when they commonly stop growing, and either remain passive, or else begin to shrink, and perhaps disappear. Sometimes, without any explainable cause, arrest of growth or even retrogressive changes will take place long before the change of life. Occasionally a spontaneous cure is brought about by an ulceration of the internal uterine wall over the fibroid, which then either breaks down and comes away in débris and putrilage, or else, by uterine contractions, is shelled out whole from its capsule. Chiefly in the interstitial variety, an arrest of growth, and even atrophy, will at times take place by a disorderly deposit of lime, which, by breaking off the vascular filaments of attachment, interferes with the nutrition of the fibroid. A uterine calculus thus formed either remains innocuous in its nest, or is squeezed out and expelled per vaginam—a phenomenon which greatly puzzled the older anatomists. Here is a womb containing three of these stones; its history is unfortunately unknown. Observe how loosely each one lies in its bed, and with what ease they could have been pried out. This calcareous degeneration, as a means of cure, is analogous to the cretaceous transformation of pulmonary tubercle. It happens chiefly in old subjects and in smaller tumors. A calcified fibroid looks as if the calcareous particles were at first deposited at isolated spots, and had afterwards cohered at irregular points of contact. This gives it the rough appearance of a mulberry calculus; but it is much less dense. This calcareous degeneration is not true bone; for it possesses none of the osseous elements, not even cartilage-corpuscle. It is the result of a chemical rather than of a physiological process, and resembles brain-coral in appearance. The false ossifications of the economy—such, for instance, as the ossification of the arteries in

old people—all point to enfeebled vitality. By analogy we may, therefore, attribute the cretaceous transformation of fibroids to their low grade of life. But that is not the only assignable reason; another one is, that the womb and its contents are very prone to this curious change of structure. Cases are on record, in which the walls of that organ have become incrustated with lime, or even converted into a bony shell. A foetus detained by missed labor has been found petrified; and you will not practice long without meeting with a placenta studded with gritty particles of chalk, sometimes in patches so extensive as to cause the death of the child by impeding the circulation of the blood.

In certain rare cases, uterine tumors primarily fibroid will take on a cystic transformation; in other words, a solid growth becomes honeycombed with cyst-like cavities, each cyst containing fatty débris and liquefied tissue. These fibro-cystic tumors affect that portion of the corpus uteri which is not covered with peritoneum, although this is not their invariable site. There they grow very rapidly, dissecting up the peritoneum from off the pelvic organs and abdominal walls, and often attain an immense size. From their physical and clinical resemblance to cystic disease of the ovaries, they are of special interest to the ovariologist.

There is yet another very interesting termination to these fibroids, which must not be overlooked. During pregnancy they receive more blood, and consequently grow more rapidly than at other times. Now, trees of slow growth have a tough and hard fibre, which resists atmospheric action; whereas the wood of quick growers is soft, porous, and liable to decay. In like manner these tumors, becoming pulpy and succulent from the rank juices of the gravid womb, present conditions favorable to retrograde metamorphosis. After labor, the uterine contractions so constrict the blood-vessels that the fibroid no longer gets the amount of pabulum needful for its quickened vitality. It shrivels, and may even disappear, either through simple atrophy, or by a process of involution analogous to that of the parturient womb. Sometimes, bruised

by the pressure to which, during the throes of labor, it has been subjected, it breaks down and comes away in grumous and fetid discharges, too often then destroying life by septicæmia.

At this stage of our inquiry an interesting question comes up—one which your patients will eagerly put, and one which you must therefore be prepared to answer: Does a fibroid ever degenerate into cancer? In good faith you can reply, “Never.” The few blood-vessels and lymph-vessels of this growth, its loose attachment to the parenchyma, and its consequently sluggish life, restrict its action, and preclude the possibility of any malignant degeneration. Careless observers, misled by the fact that a fibroid may coëxist with a cancer in the same womb, have mistaken coincidence for consequence. Or perhaps they have been deceived by the putrid sloughs of a disintegrating tumor. But, with our present light, the doctrine of the convertibility of the former into the latter is untenable.

Step by step I have led you on, until the time has come to discuss the physical and the differential diagnosis of this class of tumors. A digital examination per vaginam will discover an enlarged womb, with increased weight and diminished mobility. Conjoined with this, external palpation will show, by the play of the mass between the two hands, that the supra-pubic tumor is an integral part of the womb. In small tumors the bi-manual examination will often prove inefficacious, and in fat women wholly fail. The site of a fibroid and its kind determine the ease with which it can be discovered. Thus, a fibroid if sessile and on the lower segment of the womb, is readily discoverable by the rectum or by the vagina. On the other hand, much larger ones may escape detection if intramural or submucous, or if seated higher up towards the fundus. Retroflexion must not be mistaken for a fibroid in the posterior uterine wall. In each, there will be a tumor in the interspace between the rectum and the uterus. The direction in which the sound passes, and the ease with which it corrects the displacement, should discriminate be-

tween these two conditions. Again, in a retroflexion a sulcus exists between the cervix uteri and the apparent tumor ; and, further, the latter, being the fundus of the womb, is tender to the touch. Whereas, in a fibroid there is not this tenderness, and the cervix, without any intervening furrow, loses itself in a hunch on the back of the womb. I lay stress on this point, because you will find it stated in most of your text-books, that this sulcus does not exist in retroflexions ; but in my experience its presence is the rule, and its absence the exception. If, in a case of apparent retroflexion, the concavity of the sound looks anteriorly, there must be present either a fibroid on the posterior wall, a dislocated ovary, an extra-uterine foetation, or, what is very rare, a bifid uterus. The depth to which the sound passes will also greatly aid the diagnosis ; for nothing but a tumor—when pregnancy or an hypertropic elongation of the cervix is excluded—can lengthen out the cavity to four, to five, or to six inches. By the direction which the sound takes, and also by feeling for its tip, either above the pubes or in the rectum, you can tell on which wall of the uterus the fibroid is growing.

It is not always easy to distinguish a fibroid tumor from the gravid womb. The uterine murmur in each is the same ; nausea and vomiting are often present ; foetal movements may be imagined ; very analogous pigmentation of the skin, especially that of the forehead, takes place, the areola around the nipple darkens, and even a milky fluid can, sometimes, be squeezed out of the breast. Other signs of pregnancy are perhaps found, and the physician jumps to that conclusion, overlooking such counterproofs as the hemorrhagic attacks, the absence of moisture and of œdema around the nipple, and the lack of the ordinary changes in the lower segment of the pregnant womb. Whenever a fibroid is present, the womb feels hard,—far more so than when gravid ; the cervix does not soften down, and is not so continuous in outline with the lower segment of the womb, but projects abruptly, like the nipple on a distended breast. Nor does the vagina become violet in hue ; but to this I have seen one marked

exception. Further, the pregnant womb grows rapidly, and, when handled, becomes alternately hard and soft; it also shows a distinct outline when irritated into contraction. None of these signs are discoverable in a womb containing a fibroid. Still, in some cases all these rules will fail, and you will have to fall back on time to clear up the diagnosis. In doubtful cases it is always safer to assume the existence of pregnancy until the contrary is proved. On the other hand, do not forget that pregnancy may coëxist with a fibroid tumor, and be chary, therefore, in the use of the sound. In the treatment of uterine diseases remember this golden rule: *Think twice before you pass the sound.*

An ovarian tumor is usually distinguishable from a fibroid by its fluctuation and by its rapid growth; by the uterine sound, which will not indicate any marked enlargement of the uterine cavity; by the absence of menorrhagia, of leucorrhœa, and of uterine souffles and colics. There will be a greater mobility and a higher elevation of the womb, and a less tendency to displacement, than in fibroids; also, the ulnar margin of the hand can be sunk more deeply between the pubes and the tumor, if ovarian. Fibroids begin very rarely indeed before the age of thirty, and never after that of fifty; ovarian tumors are common to all ages before and after the period of puberty. Colored women—as I have before told you—are extremely obnoxious to fibroids, but very rarely so to cystic disease of the ovaries.

A differential diagnosis between the three varieties of fibroid is often of great importance, but it may not be attainable by the ordinary signs and symptoms; or a question of intra-uterine polypus comes up. What is the course now to be pursued? Clearly, to explore the uterine cavity with the finger. For this end, the cervical canal must be dilated either by a series of sponge-tents, or of slippery-elm-tents, or else by a fagot of laminaria-tents. But stay! these agents will not always be necessary; for—and pray do not forget this—during the catamenial flux, the increased bulk of the tumor, together with the resulting labor-like pains, so opens up the

os uteri as often to permit the passage of the finger into the uterine cavity.

In so far as danger to life is concerned, the prognosis of uterine fibroids is on the whole so favorable that you can give honest comfort to your patient. Her days, it is true, may be shortened by exhausting leucorrhœa and hemorrhages; or she may be jaded out by the pain and distress caused by the bulk-pressure, which chiefly happens when the tumor is fibro-cystic. She may also die from the dropsical effusions caused by obstructed circulation in the larger blood-vessels. But these are, fortunately, exceptional cases; whilst sudden death from the violence of the hemorrhage is extremely rare. Attacks of peritonitis are not uncommon; but even these are generally not fatal, unless they result from child-birth. The nearer the woman to the critical period of life, the more favorable is the prognosis; but remember this important fact: *The menses will linger on beyond the usual time.* Fibroid tumors, in common with other uterine affections leading to congestion, keep up the ovarian nixus, and greatly prolong the menstrual period of life. To a woman who has passed the climacteric, you can hold out hopes not only of a life of comparative comfort, but also of a decline in the size of the tumor.

Pregnancy very greatly enhances the peril of the woman. New dangers, which cannot be glossed over, now confront her. When seated in the lower segment of the womb and in front of the presenting part of the child, a fibroid may render labor difficult, dangerous, or impossible. Besides those arising from obstruction, it may cause other very grave dangers. Wherever seated, the now pulpy and succulent tumor—if of the submucous or of the interstitial variety—is liable to sustain serious injury from the effects of labor. It may be so bruised as to kindle up a fatal peritonitis, or to break down and give rise to septicæmia. Further, by hindering firm uterine contraction, it may retard the labor, or induce an uncontrollable post-partum hemorrhage. Or the irritation of its presence may goad the womb into exhausting after-pains. The retention of the placenta or of the membranes is another

complication likely to happen in these cases. In two which fell to my care, the uterine cavity was so distorted by the bulging in of a submucous fibroid, that although I succeeded in getting away the placenta, the membranes were torn off and left behind. For fear of bruising the tumor, I did not dare to force my hand into the uterine cavity to remove them; but by the third day they had worked down to the os, and were then coaxed away. In each of these cases, the expulsive pains were so hampered by the presence of the solid body in the uterine wall as to need the aid of the forceps. Both deliveries were followed by alarming flooding, by an exhausting oozing which lasted several days, and by very unruly after-pains. One of the women recovered so perfectly from the immediate effects of labor as to be able to be about the house, but in the fifth week septic symptoms set in, and she died soon after. After death, the tumor was found to have softened down into putrilage. The other woman gave me much anxiety. Her convalescence was slow, her pulse feeble and frequent; she had night-sweats, great prostration, and other symptoms which led me to fear that disintegration had begun, but she finally did well, with the fibroid greatly reduced in bulk.

A few years ago I exhibited to the Obstetrical Society of this city a womb containing in its posterior wall a fibroid larger than the ovum at term. It had been removed by my friend, Dr. Wm. B. Atkinson, from the body of a light-mulatto woman, aged thirty-five, who had died quite suddenly on the tenth day after giving birth to a fully-developed infant. This fibroid must have grown very rapidly during gestation, for previously to her delivery she had not been conscious of its existence. The labor would probably have been tedious had not the feet presented, which enabled the attending physician—Dr. W. F. Patterson—to render early assistance. Curiously enough, there was neither post-partum hemorrhage, nor any other complication. Although the tumor had begun to soften at its centre, death was, I think, due, not to pyæmia, but to puerperal embolism of the pulmonary artery. For,

from the very imperfect contraction of the womb—splinted up as it was by the fibroid—it is reasonable to suppose that some one of the physiological clots of the unconstricted uterine vessels had become long enough to project into a large vein, where its tip was washed off and swept into the pulmonic circulation.

Do not infer that every kind of uterine fibroid is dangerous to the woman in labor. Repeatedly have I discovered outgrowths on the surface of a recently-delivered womb, but never, to my knowledge, have they given rise to serious symptoms. Being either sessile or pedunculated, they rarely interfere with firm uterine contractions; whilst their position outside of the muscular layer secures them from the grip of the uterus. It is only when one lodges in the retro-uterine space that it can be squeezed, and then only by pressure from the child's head.

LESSON XXVII.

THE TREATMENT OF FIBROID TUMORS OF THE WOMB.

THERE is no cut-and-dried method of dealing with uterine fibroids; their treatment is essentially a combat with symptoms. For your guidance, a few broad rules may be given, but much must be left to your own good sense. You will have to act either on the defensive or on the offensive; and I shall therefore divide the treatment into the *palliative* and the *radical*. The former aims to accomplish the following ends: (*a*) To stay the hemorrhage; (*b*) to allay pelvic pains and uterine colic; (*c*) to lessen the inconveniences arising from the weight and the bulk of these fibroids; (*d*) to check their growth.

To stay the hemorrhage is the most imperative of all the indications, and as such I shall dwell on it somewhat fully. A day or two before the one on which the menses are expected, relieve the precursory engorgement of the pelvic viscera by a saline cathartic, and put your patient to bed, where she is to stay during her sickness. Such rest—and I mean rest in the widest acceptation of the term, both functional and physical—will alone often work like a charm. If it fails, give a teaspoonful of the fluid extract of ergot every fourth, sixth, or eighth hour, according to the urgency of the symptoms. Ergot is here our sheet-anchor. In the interstitial variety it rarely fails to do good, but in the submucous, it will occasionally increase the hemorrhages. Sometimes it acts best when combined with tincture of nux vomica, with potassium iodide, or with the oil of erigeron. Iced enemata and the application of warmth to the spine are important adjuvants to the foregoing treatment. So also are vaginal injections of large quantities of water as hot as can be borne,

and, if these fail, as cold as can be borne. Next to ergot, gallic acid is the most valuable hæmostatic. Given in large doses,—say twenty or thirty grains every second, third, or fourth hour,—I know nothing better to check the most alarming hemorrhages, either from the womb, as in menorrhagia, or from the bowels, as in typhoid fever. When serious emergencies of this kind arise, to give smaller doses is mere trifling. Any table syrup will disguise its taste and reduce its bulk. Sometimes you will succeed best by combining ergot with gallic acid; and to this you must often add laudanum enough to allay the severe pelvic and uterine pains. Two grains of quinia, or ten drops of tincture of digitalis, combined with twenty drops of aromatic sulphuric acid, and given every two hours, will sometimes succeed when other remedies fail. Scarifying the cervix a day or two before, or even during, the menstrual flux, will relieve the local congestion, and very materially lessen the bleeding.

During the intervals between the menses, or between the inter-current hemorrhages, some intelligent treatment must be adopted. To supply the waste of blood, iron in some form is indicated; not given alone, however, but in combination with such medicines as lessen the congestion of the womb. For this purpose, ergot and Indian hemp sustain the greatest reputation. Digitalis and arsenic have many advocates, and so has ipecacuanha. All these remedies must be given in full doses. McClintock recommends small doses of the mercuric bichloride; combined with arsenic and iron it has repeatedly been given by me with benefit. Spencer Wells lauds a free exhibition of vinca major—the greater periwinkle of our gardens. An infusion of two ounces of the leaves to twenty of boiling water, should be given every three or four hours in wineglassful doses. Of the fluid extract, one drachm can be given at the same intervals of time. I have had no experience with it, but, with such a recommendation, it is worthy of trial. A favorite mixture of my own consists of equal parts of the tincture of ferric chloride, dilute phosphoric acid, fluid extract of ergot, and the tincture

of cinnamon. Of this, one teaspoonful is to be taken after each meal, in a wineglassful of water.

What are you to do if the hemorrhage is not checked by these means? Inject subcutaneously from two to four grains of ergotine, and if there is no response you may at once proceed in the usual way to tampon the vagina. But let me here say that it is far better to plug up the os uteri than the vagina, for you will then not only stay the existing hemorrhage, but will also, as you will shortly learn, lessen the tendency to future ones. For this purpose, either squeeze into the os the largest tent possible, or else expose the cervix by a speculum, hook down the anterior lip, and then, with the uterine sound and speculum-forceps, pack little by little into the os and uterine cavity all that you can of a long and narrow strip of lint. First dip the lint into vinegar, and also, for convenience of removal, leave a short tail outside of the os. To this practice the objection has been made that the blood, accumulating in the womb, would force open the oviducts and escape into the peritoneal cavity. From spasmodic uterine contractions excited by the admission of air, this very fatal accident, it is true, happens so frequently after nicking an imperforate hymen, as to make that operation a very dangerous one. But the locked-up menstrual secretions are tarry and uncoagulable; whereas the blood from a fibroid rapidly clots. Further, were the objection to the tampon valid in this instance, it would be also in any case of hemorrhage from the non-gravid womb. The tampon of lint should be left *in situ* for twenty-four hours, but not longer, as by this time it will have become fetid. If necessary, a fresh one may then be introduced, to be removed after the same lapse of time. Of these two methods, I much prefer the former, because since some blood will always ooze out by the side of the sponge and through its meshes, it can be kept in for two or three days without becoming fetid; and because, it is a curious and an unexplained fact, that whatever dilates the cervical canal of a womb containing a fibroid, tends to lessen the frequency and the duration of the hemorrhagic attacks.

Repeatedly, after using a sponge-tent, either for diagnostic purposes or as a tampon, have I seen the hemorrhages much diminished for weeks and even months.

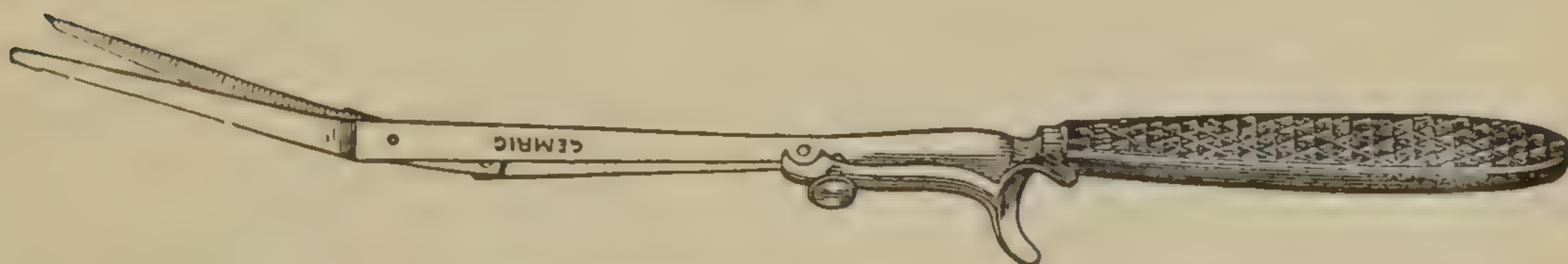
To impress this fact upon your minds, and also to show you the worthlessness of unskilled assistants, let me speak to you a moment about one of my patients, when I was a younger man. She was thirty years old, six years married, sterile, and was reduced almost to translucency by a steady dribbling of blood from a submucous fibroid. At her own home in an alley, I passed up successively three sponge-tents, before I could sufficiently dilate the cervical canal. After their introduction she gained in flesh and color, and had no hemorrhage other than that attending her menses. While I was introducing the last tent, a neighbor, who was holding a glass lamp containing kerosene, without giving us the slightest warning, fell over backwards in a fainting-fit. My patient, having at that moment my base-expanding speculum in her vagina, could not move, but she made ample amends by uttering shriek after shriek in apprehension of an explosion. I first sprang for the lamp, that was rolling over the floor in a ball of flame, and after getting my hands well scorched, succeeded in putting it out. I then groped for our assistant, who was doubled up against a chest of drawers, and soon brought her to with the contents of a pitcher. We all had a hearty laugh over this adventure, but it was cut short by my patient's going off into a violent fit of hysterics.

Let us advance a step farther; for, to combat this most formidable of symptoms, to confront what Homer calls, "the purple death," we must be armed at all points. You cannot keep a woman always tamponed, and yet, when you remove the tents, she may bleed as badly as ever. Swab over the endometrium now with fuming nitric acid, or carry up in the jaws of the speculum-forceps a good sized piece of the silver nitrate, and leave it within the uterine cavity to dissolve there. Should these prove unsuccessful, stretch open the cervical canal by the dilator, and after introducing the slender nozzle of the uterine syringe between the open blades, inject

into the uterine cavity one or two drachms of the tincture of iodine, or of a saturated solution of Monsel's salt. This rarely fails. But you may ask me, if this is so effectual a remedy, why delay it?—why not resort to it at first? I answer, because all intra-uterine injections, for reasons with which you are familiar, are attended with some risk; and doubly—yes, trebly—so, if the os has not been previously dilated. Fungous vegetations usually grow luxuriantly on the endometrium of wombs bearing a fibroid tumor, and the use of the curette will often stop hemorrhages that have baffled every other treatment.

Should the hemorrhage still keep on or return, you must now permanently dilate the cervical canal to the extent of easily admitting your index finger. This is done by incising the whole canal, either bilaterally with the hysterotome (Fig. 92), or at several points with a probe-pointed and curved bistoury. In preforming this operation, it is best to expose the cervix by a speculum, and to steady the anterior lip with a small tenaculum. Whenever the cervix is thinned down, and the os reduced to a mere rim, a strong pair of curved scissors will readily slit its margin. In case the cervix is long and not at all effaced, my own practice is to stretch open the canal by the dilator, and crowd into it a fagot of laminaria tents, before resorting to cutting instruments. My reason for this is, that, very commonly, after such a dilatation of the os, the further descent of the tumor prevents the opening from closing.

FIG. 92.



DOUBLE-BLADED HYSTEROTOME.

As intelligent men, you will demand the rationale of this operation. This I cannot give, for the resulting benefits are empirical facts, which you must take on trust. Some writers

hold that large vessels are divided by this incision, and that an important supply of blood is thereby cut off from the tumor. This, however, does not explain the good effects of a sponge-tent. Others, that more room is thus gained for the tumor, and the veins are then relieved from the engorgement due to pressure. Finally, there are those who contend that the enlarged os, by furnishing an open channel, prevents such an accumulation of blood and mucus as might distend the uterine cavity and stretch open the mouth of its sinuses. Choose whichever explanation you prefer; to me, they all seem forced.

After such an incision of the os uteri, the hemorrhages will often remain for months in abeyance. But should they start again to any alarming extent, you hold in reserve yet another, and that the last plan. It is one devised by that distinguished ovariologist, the late Dr. Washington L. Atlee,* and one which is very successful. After well dilating or incising the os uteri, a long-handled bistoury, curved and probe-pointed, is passed up into the uterus as far as the guiding finger will reach, and then is drawn firmly down over the tumor, freely dividing its capsule and cutting into its substance to a depth of about half an inch. I, however, as you will shortly learn, prefer to use a fine saw for this purpose. This incision severs the superficial blood vessels, which are the ones that bleed, and to that extent lessens the vascular supply. It also helps the self-enucleation of the fibroid.

Stripped of its power to bleed, a fibroid is shorn of much of its power to do harm; but there will remain for treatment pelvic pains, and the vesical and rectal tenesmus. Rest will also here prove of avail. When the tumor becomes too large for the pelvis, if not too firmly impacted or too adherent, it must be dislodged and pushed up above the brim; and, by the way, this manœuvre has succeeded in putting a stop to an obstinate hemorrhage. To effect this, put the woman in the knee-breast posture, introduce two or more fingers into vagina, and, for fear of exciting an attack of peritonitis,

* *Trans. American Medical Association*, 1863, p. 558.

gently graduate the force to the resistance ; bearing in mind that less will be needed, if the tumor be pushed up by an upward and a lateral pressure, so that it may partly rotate on its axis, and thus rather skirt the sacral promontory than pass over it directly upward. This spiral movement you will find extremely useful in the reposition of a retroverted womb, whether empty or gravid. In one case of impaction, the tumor was quickly raised above the brim by the steady pressure of Dr. J. P. White's "Uterine Repositor," (Fig. 93) after my friend, Dr. A. Frické, and I, had twice failed in our endeavors to push it up by the hand, although the patient was put each time under ether, and we worked turn-about. In using this repositor the spiral wire-spring is placed on the chest of the operator, who can thus keep up a continuous pressure without fatigue.

More commonly at the menstrual periods, but also at other times, the womb is excited to extrude the foreign body. These uterine colics will tax all your skill and tact. The

FIG. 93.



WHITE'S UTERINE REPOSITOR.

early use of morphia by the mouth must be avoided, as that drug soon becomes a diet. Begin with hyoscyamus or with belladonna, or with vaginal suppositories of morphia and belladonna—say, one grain of the former to two of the latter. I am indebted to my friend, Dr. E. L. Duer, for the following method of uterine medication, which you will find very convenient in country practice: A teaspoonful of glycerine, containing the anodyne, is poured into a hollow made in the centre of a thin sheet of ordinary cotton-wool not quite so large as one's palm. The edges being now gathered up and

securely tied, there will be formed a small tampon, which the woman can herself pass up into the vagina. For convenience of removal, the ends of the string should be left long enough to hang out of the vulva. In very severe attacks of pain, a hypodermic injection of morphia will often be needed. On the whole, I think the *cannabis indica* is the best narcotic with which to begin your treatment; for it has the double property of relieving pain and of restraining uterine hemorrhage. You may sometimes be tempted to use the hydrate of chloral; but give it cautiously and watch its effects, for in my hands it has certainly increased the bleeding. Perhaps by weakening the action of the vaso-motor nerves, this drug increases the calibre of arteries, and thus tends to excite hemorrhages.

To lessen the inconveniences arising from the weight and the bulk of these tumors, various forms of pessary may be used. But they are available only when these fibroids are small enough to move about freely in the pelvic cavity. Whenever they are too bulky to sink very low into the pelvis, or, having been pushed up, you wish to maintain them above the brim, external support must be resorted to. An elastic belt, stiffened by slips of whalebone and kept in position by a perineal strap, will then give much comfort by relieving the pelvic viscera from pressure. I have been able to send on a jaunt through Europe a patient with a very large fibroid thus supported. Frequent baths will also assuage the vesical and rectal tenesmus.

To check the growth of these tumors, you will advise total abstinence from sexual intercourse, more or less of the recumbent posture, loose dresses, a somewhat sedentary life, and a spare but wholesome diet. You will also give such medicines as are known to lessen the flow of blood to the reproductive organs. This class of remedies comprises ergot, digitalis, *cannabis indica*, borax, and potassium bromide or iodide. These may be given singly or in combination. Every means must be used to prevent portal and pelvic congestions. With this object in view, the contents of the bowels must be kept solu-

ble, and rest strictly enjoined before, during, and after the menstrual flux. Broken-down constitutions fearlessly build up by vegetable and mineral tonics; by stimulants only very exceptionally. All growths thrive best in a cachectic soil.

Give comfort to your patient in her sore estate; brighten up her hopes, and above all distract her attention from self. The correlation between mind and matter is not the mere postulate of the metaphysician. Shrewd observers have noticed that too much heed given to any one organ determines the blood to it. It is not, therefore, by a mere coincidence that specialists, with the lucky exception of gynecologists, are very likely to die from the very diseases which they treat. In a valuable communication to the *Journal of Mental Science*, on the "Influence of the Mind upon the Body," Dr. D. Tuke proves, by very forcible illustrations, that "Thought strongly directed to any part tends to increase its vascularity, and consequently its sensibility;" and, further, that "There is no sensation, whether general or special, excited by agents acting upon the body from without, which cannot be excited also from within by cerebral changes (including those associated with emotional excitement) affecting the sensory ganglia."

By these means, and by those previously enumerated, you will very generally succeed in tiding your patient safely over the perils of the menstrual period of her life; and, the climacteric once reached, her future will thereafter be one of comparative comfort.

We come now to the radical treatment of these tumors; and here I cannot promise you so large a measure of success. Can a uterine fibroid ever be discussed by therapeutic measures?—is a question still agitated by the medical world. Out of a horde of discordant units it is not easy to strike a fair balance, but the weight of evidence undoubtedly inclines to the negative side. And yet, why should not such cures happen? How is it that means tending to restrain growth cannot also tend to cause absorption? Consider, further, the histological resemblance of these fibroids to the hypertrophied womb. If

in the one a process of involution takes place from a lessened supply of blood, why cannot a like process be brought about in the other by a like cause? But positivism is the watch-word in scientific research, and the question, therefore, should not be, "What ought to be?" but "What is?" In answer to this question, I must candidly admit that theory is here not sustained by practice, and that very few typical and trustworthy cases have been reported of cures effected by internal remedies. Perhaps one reason of this is (you see how reluctant I am to yield this point), that, the treatment being a long and tedious one, the patient either gets disheartened and gives it up, or else goes from one physician to another. I have seen certainly two cases in which the fibroid slowly shrank away coincidently with—I hardly dare to say, under—the persistent use of iron and ergot. I can also testify to the marked diminution of a very large fibroid after the long-continued friction of an ointment composed of eight grains of the mercuric biniodide to the half-ounce of lard. I was led to the use of this ointment from observing its good effects in goitres. The part anointed should be exposed to the rays of the sun until a burning sensation is felt. By stimulating the trophic nerves to greater activity, the constant galvanic current has caused retrogressive changes in these tumors. I look upon this agent as one yet in its infancy, and as one from which much may in the future be expected.

The late Drs. Atlee and Peaslee reported successful cases from the internal administration of ammonium chloride. It should be taken for months thrice daily in ten grain doses. It is best given not in compressed pills, which irritate the stomach, but dissolved in cinnamon water, or mixed with licorice powder. I like to give it in combination with ergot, and I have thus seen a fibroid tumor of the size of an adult head dwindle down to that of an apple.* Simpson lauds potassium bromide; but from its use I have not had any cures. McClintock reports good results from the use of calcium chloride. M. Guéniot has proposed the absorption of fibroid tumors

**Transactions State Medical Society of Pennsylvania*, 1879.

by such agents as tend to produce fatty transformation of tissue.* According to C. Bernard, these steatogenetic substances are arsenic, phosphorus and lead. In a prize essay, Dr. Samuel R. Percy shows that phosphorus especially produces oily degeneration, which "destroys structure, disintegrates cells, and as a consequence, vital action is gradually but surely lost."† Could the action of this drug be limited to the uterine walls, there is little doubt but the absorption of their growths would result. But, unfortunately, its action, being diffused over the whole body, would tend to cause the same process of disintegration to take place in more vital organs.

A more feasible and rational method of treatment, first proposed by Prof. Hildebrandt, of Königsberg,‡ has proved of great value in my hands and in those of others. He successfully treated nine cases of fibroid tumors of the uterus by daily injections of the aqueous extract of ergot under the skin around the umbilicus. By this treatment one fibroid, reaching above the navel, wholly disappeared. Another, which so filled the entire abdominal cavity as to press upon the false ribs, was much reduced in size. In the other cases the tumors were greatly diminished in volume; and in each one all the alarming symptoms—such as menorrhagia, metrorrhagia, leucorrhœa, and uterine colics—disappeared. The duration of the treatment was from two to four months. In one case only did the toxic effects of the ergot compel a discontinuance of the treatment. For these injections, Prof. H. uses an ordinary hypodermic syringe of a solution containing 3 parts of ergotin to 7.5 parts each of glycerine and water. The mode of action of ergotin in these cases is, undoubtedly, its property of contracting the uterine walls, whereby the nutrition of the tumor is interfered with. It is, therefore, very questionable whether any but interstitial and submucous tumors can be acted upon.

* *Medical Times and Gazette*, March 23, 1872, p. 350.

† *Transactions Am. Med. Association*.

‡ *Half-Yearly Abstract*, January, 1873, p. 248, from *Berliner Klinische Wochenschrift*, June 17, 1872.

With regard to this kind of treatment, a number of physicians have reported very favorably. At a meeting of the College of Physicians at Philadelphia, held January 15th, 1873,* Drs. W. V. Keating and John Ashhurst reported cases in which large fibroids had rapidly diminished in size by one-third and one-half, after sixteen injections made in nearly as many days. One of these cases was seen by me, and I can bear witness to the rapid diminution of the tumor, and to the very marked improvement in the health of the patient. Dr. Keating used a hypodermic syringe-ful, or about twenty drops, of the following solution: *R.* Ergotinæ gr. xlv; glycerinæ, aquæ destil., āā m̄cv. Dr. Ashhurst employed the officinal fluid extract of ergot, diluted according to the following formula: *R.* Ext. ergotæ fluid. f̄iss; glycerinæ f.̄ij; aquæ f̄ij. Of this, twenty minims, containing nearly seven minims of the fluid extract, were used at each injection. In each case the injections were made once daily, except when omitted for some special reason, and the point chosen for puncture was the sub-umbilical region. Abscesses were in each case avoided by making the injections as deep as possible, the nozzle of the syringe being carried fairly down to the level of the muscular parietes. A successful case is likewise reported by Dr. Wm. C. Wey, who, in a very impressible lady, had to abandon the hypodermic injections for vaginal and rectal suppositories, containing eighty drops of the watery extract of ergot. Dr. B. F. Sherman also has treated a uterine fibroid by hypodermic injections, to the great improvement of all the symptoms. He used Squibb's extract, diluted with glycerine.† Another successful case is reported by Dr. C. D. Palmer,‡ and still another by Mr. John Clay,§ in which, after one hundred hypodermic injections, which were suspended during three menstrual periods, the tumor very sensibly diminished, and the patient became "surpris-

* *American Journal of Medical Sciences*, July, 1873, pp. 131, 138.

† *American Practitioner*, May, 1873, pp. 284, 285.

‡ *Clinic*, April, 19, 1873, p. 183.

§ *Lancet*, May 10, 1873, p. 663.

ingly improved." A concentrated infusion of ergot was used, three minims of which were equal to four grains of ergot, and this quantity was daily injected in the hypogastric region. These injections caused, at first, great pains and redness of the skin; but after a few days were well tolerated. Headache and severe pain in the back evinced the constitutional action of the ergot. That excellent gynecologist, Dr. W. H. Byford, of Chicago, reports several successful cases, which had been treated in like manner.* Through the squeezing which the tumor got from the contraction of the uterine walls, necrosis took place, and it was extruded in fragments. This operation is, however, not without inconvenience, and not wholly without danger. Headache, severe uterine pains, and a spurious hectic fever, attended this use of ergot in some of the cases of which I have cognizance. Twice have I seen a peritonitis set up by the violent contractions of the womb. In one of these cases the issue was fatal; yet the benefit is often so great that this use of the hypodermic syringe should not on the score of hazard be rejected. The most elaborate investigation of this mode of treatment has been made by E. Evetzky (*N. Y. Medical Journal*, March, 1882, p. 231,) who has collected 223 cases of fibroid tumor of the womb treated by hypodermic injections of ergot, and with the following results:

In 42 cases the tumor was wholly absorbed; in 9 cases it was expelled; in 71 the tumor was lessened in size and the symptoms relieved; in 51 no impression was made upon the size or the density of the tumor, yet the symptoms were improved; in 49 cases no benefit was appreciated; in 1 the patient died from the treatment. Thus a "radical cure was obtained in one-fourth, a marked improvement was obtained in one-third, and relief from the hemorrhage in one-fourth of the cases."

From what I have learned from the various reports, and from my own personal observation, I am led to conclude that

* *Transactions American Medical Association*, 1875, also *Trans. American Gynecological Society*, vol. i., p. 168.

Prof. Hildebrandt's solution is open to the objection of forming abscesses, giving great pain, and discoloring the skin at the seat of puncture. A further objection to it lies in the fact, that there is no standard preparation of ergotin which is at all trustworthy. I should, therefore, recommend as a substitute either Mr. Clay's concentrated infusion as given above, or, what I prefer, Bonjean's purified extract of ergot, dissolved in water enough to make it sufficiently fluid to pass through the nozzle of the hypodermic syringe. My friend, Dr. Dowling Benjamin, of Camden, N. J., made for me an excellent infusion, in which each minim represented one grain of ergot. Five grains of salicylic acid added to each ounce kept it sweet during our hottest weather. Dr. Squibb suggests a watery solution of a solid extract obtained by evaporating the official fluid extract.* Fifty grains of this extract dissolved in three hundred minims of distilled water will represent a grain of ergot in each minim of the fluid. A. R. Simpson obtained excellent results from the following formula:

R. Ergotinæ,	3ij.	
Chlorali,	3j.	
Aquæ destillatæ,	3ij.	M.

Sig.—Sixteen minims to be injected subcutaneously every second or third day.

In the place of ergot, sclerotic, or sclerotinic acid, its active constituent, has been tried by several physicians and favorably commented on.

If the subcutaneous treatment cannot be borne, the ergot should be given by the mouth or by the rectum, in as large doses as possible, and kept up for several weeks, or even months. An excellent rectal suppository can be made by incorporating ten grains of solid extract with cacao butter. I feel sure that the permanent effect of ergot, when given by the mouth, is enhanced by its combination with potassium iodide.

But, supposing the case is not amenable to the treatment

* *Proceedings of the American Pharmaceutical Association*, 1873.

by ergot alone, can the fibroid be removed or be destroyed? This question brings up the important consideration of their surgical treatment proper. There is no doubt that, by the continuous peristalsis of the uterine fibres, both interstitial and submucous fibroids tend to become polypi—the one (true) by the formation of a stalk, the other (false or naked) by spontaneous enucleation. Now, if we take this hint from nature, and aim to aid her in bringing about these changes, we shall do the least harm; for the removal either of true or false fibroid polypi is recognized by all surgeons as a legitimate operation.

The simplest and safest method of effecting such an extrusion of this fibroid, is to dilate the os by several incisions, and to keep up a persistent contraction of the uterine fibres by the continuous use of ergot. If, however, there should be no disposition on the part of the fibroid to become polypoid, the process must be aided by incising the capsule. This may be done, as Atlee recommended, with the curved and probe-pointed bistoury, or, as advocated by Matthews Duncan,* with a straight and pointed bistoury, wrapped with lint to within half an inch of its point. With the former instrument, the finger will be the guide. With the latter, the duck-bill speculum is first introduced, the uterus is next fixed by supra-pubic pressure and by a tenaculum in the os, and then an incision is made into the most prominent portion of the tumor. In my first cases I slit open the capsule with a pair of long-handled scissors; but latterly I have found Adams's Subcutaneous Saw a much more handy and efficient instrument for the purpose (Fig. 94). The finger should at once be passed into the incision, in order to separate the lips of the capsule, and break up its attachments to the tumor. The patient is now put on the steady use of ergot, and the extrusion of the tumor is left to the expulsive efforts of the womb. This process of gradual enucleation may last for weeks, and, as the tumor descends, should be aided by traction, and by breaking up the capsular attachments as they come within

* *Edinburgh Medical Journal*, vol. xii., 1867, p. 713.

reach. This method of dealing with these growths can be resorted to only in fibroids which bulge down into the uterine cavity, and it is by no means free from danger. Peritonitis may carry the patient off, or what is more common, blood-poisoning through the absorption of putrilage during the breaking down of the growth. Yet there are, besides my own, so many successful cases reported as to make me deem

FIG. 94.



ADAMS'S SUBCUTANEOUS SAW.

the operation a warrantable one in selected cases.* Although I should advise you to make as long an incision as possible, it is astonishing through what a small incision a large fibroid will slowly but surely crowd itself. Duncan finds an incision of one inch in length to be quite sufficient, and Greenhalgh burns merely a hole through the capsule by means of the actual cautery.† I have seen large tumors work their way through an incision barely admitting my index finger. In such cases the opening, of course, becomes much larger by stretching and by ulceration. In one of my most successful cases, I merely shaved off, with the wire *écraseur*, the sub-mucous portion of an interstitial fibroid.

Immediate enucleation, or the removal of the fibroid at one sitting, is always the best plan when possible—that is, whenever the os uteri is sufficiently dilated or dilatable, and the tumor is within operative reach. It saves the woman from the septic risks attending the slow extrusion, and consequent death of the fibroid. The operation is performed in the following manner: A free incision is made by the saw through

* *Transactions of the Medical Society of Pennsylvania*, 1873, p. 88.

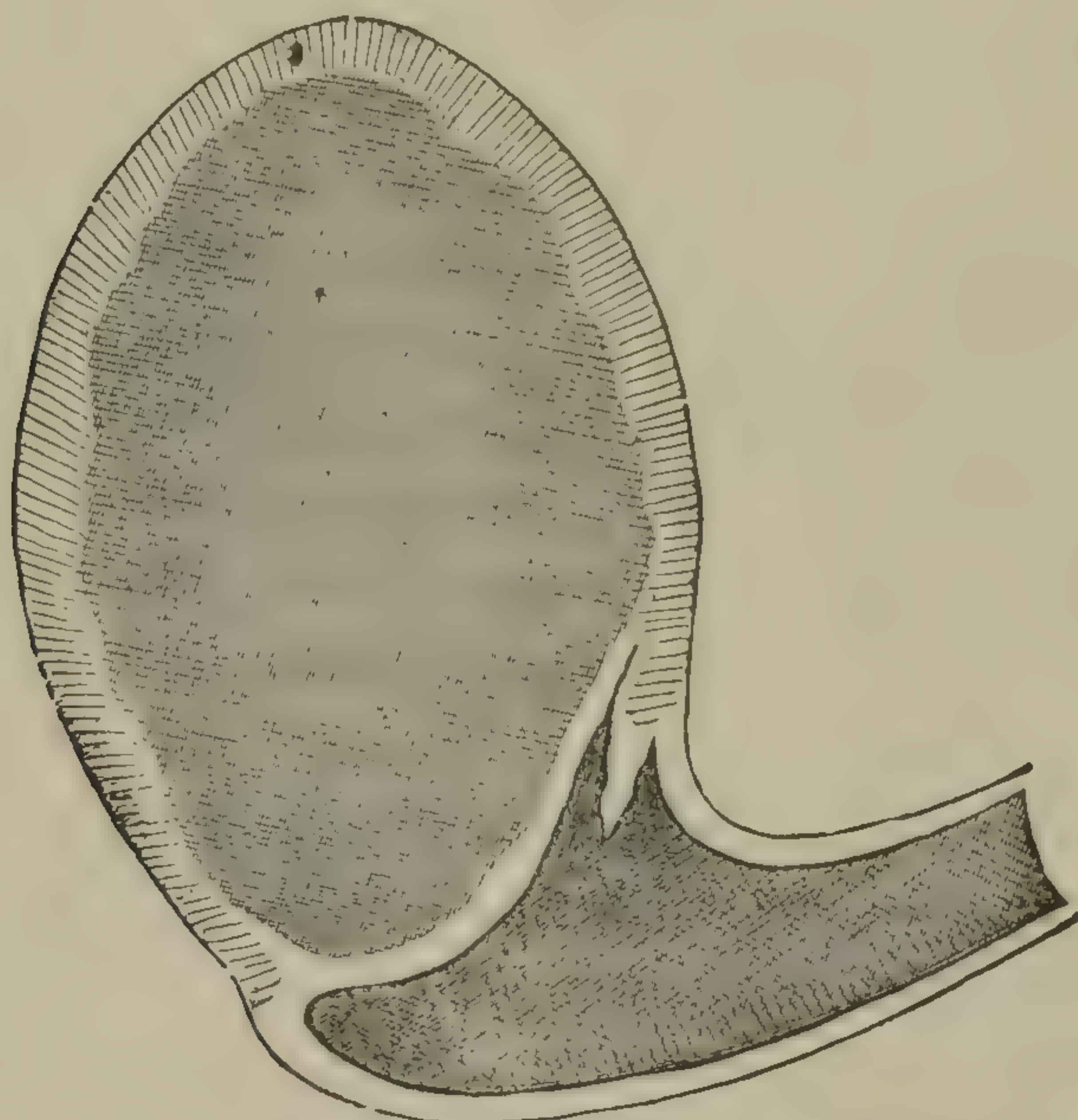
† *Medico-Chirurgical Transactions*, 1876.

the capsule, which is then peeled off, partly by the finger and partly by some blunt-edged instrument like a spatula, or like the flat ivory handle of a bistoury. I have found a strong steel loop, in form like the dull curette but much larger, to answer very well. Dr. Thomas, of New York, has devised a serrated spoon-shaped curette, which is also a good instrument to sever these attachments. The naked portion of the tumor is then seized by a strong volsella forceps, and very forcible traction made on it—sometimes, as much as one puts on the head of a child in an instrumental labor. As the growth is dragged down, its capsular attachments are broken off as they come within reach, until, finally, it is so loosened as to be torn out from its bed. Once, when I could not wrench out the fibroid on account of strong and unreachable attachments, which refused to yield to very strong traction made in their axis, I succeeded in breaking them off by traction made across their grain. This was done in the following manner: An obstetric crochet was passed up in the mural cavity and hooked into the highest free portion of the tumor, which was then, with comparative ease, rolled out, or pried out, of its bed. This measure of success cannot always be attained at one sitting, but, as an evidence of what may be effected, let me show you a diagram (Fig. 95), representing *in situ* a fibroid which I lately removed in this amphitheatre before some of you. It was a typical interstitial fibroid, with its lower and projecting end involving the hind lip of the cervix. It was removed from within the wall itself of the womb, neither my fingers nor any of the instruments having entered the cavity proper of the womb. The tumor weighed twenty ounces, and had so crowded down the uterine walls as to invert most of the cavity. The capsule was thicker than the rind of an orange, but, being cut open with the saw, bleeding during the operation was not serious, and the woman recovered without a bad symptom. In precisely the same manner I enucleated from a patient of Dr. Oliver P. Rex's a uterine fibroid weighing eighteen ounces. It was killing the lady by dreadful hemorrhages, and she was very

much reduced at the time of the operation; but she promptly got well.

I also enucleated a fibroid weighing twenty-eight ounces, for an unmarried patient of Dr. Emory E. Eshleman's. She

FIG. 95.



INTERSTITIAL FIBROID TUMOR, BEFORE ITS REMOVAL BY ENUCLEATION.

was diaphanous from loss of blood, and very weak indeed. Most of the tumor was interstitial and in the anterior wall of the womb; but the lower end was submucous, or at least it projected into the uterine cavity. The very thick capsule of this portion was incised, and all of it, within reach of the finger, stripped off from the tumor. Two weeks later, the naked fibroid began to protrude from the mouth of the womb. It was removed in fragments, but not without a bad tear of the perineum. It was a very formidable operation. Very unfortunately the lady died on the next morning from exhaustion. On smaller tumors I have repeatedly operated and with success.

These radical operations should not be undertaken directly after a serious hemorrhage, but after the woman has rallied from its effect. Any oozing of blood following enucleation can be checked by injections of vinegar, by swabbing out the

womb with Monsel's solution, or by stuffing it with iron-cotton. Should the discharges become offensive, deodorizing injections must be resorted to. One very valid objection obtains against this operation of enucleation—viz., the fact that these tumors are often multiple, so that, when the largest one has been removed, the remaining ones rapidly take on growth. Yet, when the os uteri is well dilated by the tumor, I should prefer this operation to any other one.

Whenever the growth so projects into the uterine cavity as to be seizable with the volsella, its enucleation by avulsion should always be first tried. Of the value of this operation I can speak in positive terms, having performed it thirteen times. In all, the operation was by no means easy, and in two, very tedious—the tumor being removed piecemeal. In every case no vestige of the parasite was left behind, and the women were restored to complete health, save in one instance, in which death from heart-clot took place on the sixteenth day after the operation. My own method of performing this operation, is to seize the fibroid with a strong pair of volsella forceps, and slip over it the loop of a wire-écraseur. The mucous capsule is next cut through by the wire as flush with the uterine wall as possible, and then the fibroid is wrenched from its bed by alternate traction and twisting, both with the écraseur and the volsella, while firm supra-pubic pressure is kept up by the hands of an assistant.

Such operations as the foregoing can be performed, however, only on submucous fibroids, or on a very few partly interstitial ones which bulge more or less into the uterine cavity, and dilate the os uteri. But what is to be done if the fibroid be wholly interstitial or wholly sub-peritoneal? From the exhausting hemorrhages, from the excessive suffering, from the effects of the bulk-pressure, or from a dropsy in the abdominal cavity which a sub-serous fibroid will sometimes cause, the woman may be perishing; but we must not give up in despair. Electrolysis may now be tried according to the method of N. B. Freeman* or of Drs. Kimball and Cut-

* *New York Medical Journal*, March 7, 1885.

ter.* Sharply-pointed and partly insulated needles are thrust deeply into the substance of the tumor through the abdominal walls, or per vaginam, and a strong galvanic current passed through them. I have resorted to this plan once, but, as the tumor turned out to be malignant, the trial was not a fair one, and I have had no further experience. Yet I cannot but fear that this operation is attended with more risk to life, than that of oöphorectomy, or the removal of the ovaries. At the present time, oöphorectomy is the favorite operation for uterine fibroids which resist milder and palliative modes of treatment. The object of this operation is to bring on abruptly the menopause, for the cessation of menstruation usually results in a marked diminution in the size of the tumor, and in a great amelioration of all the symptoms. To the great value of this operation I can warmly testify, for I have performed it a number of times, and most successfully with regard to its effect upon the tumor. Its consideration I shall reserve for a future lesson.

Sometimes, however, the ovaries are so embedded in the vascular capsule of the fibroid, or so stretched out into long bands, or so low down in the pelvis that they cannot be removed. I have several times on this account been foiled. Keith states that in nine cases he found the extirpation of the ovaries to be impossible.† The only alternative then left is the heroic one of extirpation of the tumor-bearing womb itself. This operation is termed hysterectomy, and as it is closely allied to that for the removal of ovarian tumors, I shall defer its consideration until after we have discussed the subject of ovariectomy.

* *American Journal of Medical Sciences*, July, 1887, p. 50.

† *Hysterectomy for Fibrous Tumors of the Uterus*, p. 8.

LESSON XXVIII

DISEASES OF THE OVARIES AND OVIDUCTS.

ANATOMY: The ovaries are two almond-shaped glands, attached to either side of the womb by a ligament of contractile tissue called the ovarian ligament, and they are enclosed between the two layers of the peritoneum known as the broad-ligament. It has recently been contended that this envelopment in the broad-ligament is not a complete one, but that the peritoneum is absent from the posterior surface of the ovary. This has been denied, but even if it be so, the fact does not seem thus far to have any physiological or any pathological bearing.

The ovarian nerves and blood-vessels run between the two layers of the broad-ligament, the former coming chiefly from the renal plexuses of the sympathetic, the latter from the spermatic arteries. The ovaries being themselves movable bodies and attached to a movable organ, the exact position of which remains yet a moot question, their own natural situation has not yet been authoritatively determined. His,* from an examination of three suicides, holds that the ovary in the adult virgin hangs with its long diameter almost vertical, and with one side against the wall of the pelvis, but below the brim, the free border being behind and the attached end below. Each oviduct is looped over the ovary, rising along the front and falling over behind it. Hence the ovary lies on the fimbriæ, which turn back and spread over the summit of the ovary. The ovaries are generally situated on a level with the inlet of the true pelvis, the left one being in front of the rectum, the right one surrounded by a coil of small intestines.

* *British Medical Journal*, Dec. 10, 1881, from *Archiv f. Anat. u. Entwick.*, 1881, Nos. 4 and 5.

When healthy they keep so high up as to be beyond the reach of the examining finger, and consequently they are not impinged upon during coition.

The important and special function of the ovaries—that of secreting and excreting the Graafian follicles or ovisacs—and their monthly engorgements are the causes of many of the diseases to which they are subject. Hence it is that affections of the ovary, being due most commonly to perverted function, rarely occur before puberty.

MALFORMATIONS.

Absence of the ovaries is a congenital condition very rarely met with. It is usually associated, either with the absence also of the womb, or with an imperfect development of the other portions of the sexual apparatus. The breasts will be flat, the vagina generally imperforate, the vulva small, the pubic hair absent, and sexual feeling wanting. Menstruation never takes place. Very commonly the growth of the body is arrested, and the stature is dwarfed to that of a child. Occasionally, however, there is an approach to the masculine type in the size, the figure, the voice, and in the growth of hair on the face and on the body.

An arrested development, or a rudimentary condition, of the ovaries is a malformation more common than the preceding one. The womb is then infantile in size, and the vulva and vagina are small and the pelvis is narrow. Puberty either fails to take place or it is postponed. When menstruation is present it is scant and appears at long intervals. General development is impaired, and the figure and mental characteristics may be those of advanced childhood. Sexual feeling is either wholly absent, or very imperfect.

Diagnosis.—Whenever the ovaries are wanting, their absence cannot be positively made out by a digital examination of the parts, for even fully-formed ovaries often elude the finger. The diagnosis depends mainly on the symptoms previously given. If the ovaries are rudimentary, the finger passed high up the rectum, while the woman is anæsthetized,

will sometimes recognize them. But the diagnosis rests usually on some manifestation of puberty, and the greater these manifestations the greater the curability.

Treatment.—For the complete absence of the ovaries all treatment is of course useless. Whenever these organs are in a rudimentary condition more can be done for the woman, but success is by no means assured. Every treatment that tones up the body is of service. The rest-cure, with its accessories of massage, general faradization, and over-feeding, promises much. Electricity has done good when one pole is applied directly over an ovary, and the other pole placed either on the sacrum or on the cervix uteri. It is still more efficacious when the reophore, in the form of a properly insulated sound, is passed into the uterine cavity. Should the interrupted current fail to do good, the galvanic current may cautiously be tried.

From the vascular and nervous kinship between the ovaries and the womb, all stimulants to the latter tend to invite blood to the former, and from this flux may come growth. It is, therefore, good practice to irritate the womb by tents, by applications of iodine and of silver to its cavity, and especially by the use of galvanic stems. The marriage relations sometimes quicken dormant ovaries into life, and development, followed by pregnancy, has been the result. But the remedy is a hazardous one, for if the sexual sense be not awakened, as often it will not, the union leads to much unhappiness.

INFLAMMATION OF THE OVARY: OVARITIS.

Acute inflammation of the ovary rarely exists per se, but it is by no means an infrequent accompaniment of pelvic peritonitis and pelvic cellulitis, the causes of each being the same. It is then so masked by the greater inflammation that its symptoms are lost in the general ones. Following the same course as that of pelvic inflammations, it begins with fibrinous exudation and ends either in resolution, or in supuration, or in chronic hypertrophy.

The treatment of this inflammation is the same as that of

pelvic inflammation—viz., rest, poultices, vaginal injections of hot water, and morphia and quinia in large doses. Sometimes the local abstraction of blood will be useful. Should pus form, it must be evacuated by the aspirator, and preferably per vaginam. After such an inflammation, and especially if caused by gonorrhœa, the ovary usually remains permanently injured, its functions being crippled by fibrous bands, by adhesions, by hardening of its stroma, and by thickening of its investing peritoneum. If both ovaries be thus affected, sterility inevitably ensues.

CHRONIC OVARITIS.

By chronic ovaritis is meant either persistent congestion of the ovaries, or such tissue-changes in the stroma or in the follicles of the ovary, or in both conjointly, as are brought about from a previous attack of acute inflammation or from persistent hyperæmia. In its early stages it appears to be characterized by passive congestion, followed by infiltration of sero-sanguinolent fluid and by increase in bulk. Later on, if the congestion be not dispersed or it passes the health-limit, it becomes formative, or nutritive; the capsule thickens, the follicles enlarge, and a general hypertrophy takes place. According as the brunt of these changes falls on the stroma or on the follicles, the degeneration is termed either interstitial or follicular. When the stroma is chiefly attacked, the ovary becomes hard and rugous; when the follicles are diseased, they increase in size, and one or two of them are usually found to be distended into miniature cysts. There are indeed good reasons for the opinion, that an ovarian cyst is a dropsy of many ovisacs, and is caused by ovaritis. The left ovary is the one more commonly affected—a fact accounted for by the pressure of the distended rectum, and by the emptying of the left ovarian vein into the renal vein instead of into the vena cava, which is the course of the ovarian vein on the right side. It is a very common form of disease, very rarely coming from an acute attack, but starting subacutely with all the symptoms of chronicity.

Causation.—Whatever induces a lasting congestion of the reproductive apparatus tends to create ovaritis—a torn cervix, a lacerated perineum, an arrest of involution after labor, dysmenorrhœa, and uterine tumors, flexions, and displacements. Barren women are very liable to this disease, and so especially are women who shirk maternity by preventive methods; for in both the menstrual congestions continue, without that much-needed break which gestation and lactation bring, and in the latter, the sexual congestions arising from incomplete intercourse are not relieved. So, repeated erectility from self-abuse, by ending in a passive congestion of the womb and of the ovaries, will tend to produce this lesion. The prevalence of this habit in unmarried women is, I think, very much overrated, and yet I have seen from this cause several cases of ovaritis accompanied with prolapse of the ovaries. In one, the ectropion of the cervical mucosa was so marked that it leads me to think, that this is the cause of the occasional inversion of the womb in virgins. My notebook shows also cases of ovaritis from such imperfect sexual relations as come from the ill-health or the advanced age of the husband, and not a few from immoderate sexual intercourse. Some of the most common causes of chronic ovaritis are emotional in character, such as long engagements, disappointments in love, single life, the reading of corrupt literature, unhappy marriages, nerve-exhaustion, and hysteria. These causes operate by producing circulatory disturbances, which keep up a constant congestion of such exacting organs as the ovaries.

Symptoms.—Pain in one or in both ovarian regions, especially in the left one, is a prominent symptom. It is increased by walking or by standing, and is lessened by the recumbent posture. Starting usually from the ovary, it radiates to the small of the back, or down the inner side of the thigh. It often begins from a week to ten days before the monthly period, and goes on increasing until the flow appears, when it commonly abates. Menorrhagia may usher in the disease, and may continue during the remainder of men-

strual life, which then is usually prolonged. Ordinarily, however, menstruation becomes scant and irregular, postponing rather than anticipating. Sometimes amenorrhœa takes place. Sterility is usually present, and so almost always is nerve-exhaustion with all its emotional manifestations. Pressure over each ovarian region elicits pain and causes a contraction of the rectus muscle on the affected side. The finger, per vaginam or per rectum, will often discover behind the cervix uteri, or to one side of it, the very tender ovary, of the form and size of an almond. Pressure on it gives a sickening pain, very unnerving in its character. Reflex nervous symptoms are very common, especially those of hysteria. In the form of pain, they show themselves in backache, spine-ache, nape-ache, and headache; in pain under the left breast, in the scalp on the top of the head, and in the stomach, bowels, womb, and coccyx. Nervous dyspepsia is common, accompanied by costiveness, nausea, vomiting, flatulent distension, and noisy eructation. Wakefulness and bad dreams are not infrequent. Other reflex neuroses may appear, such as paralysis or spasm of the sphincter muscles, the latter producing asthma, dysmenorrhœa, irritable bladder, and painful defecation. Then, again, there may be nervous disturbances, taking the form of low spirits, violent hysterical attacks, epilepsy, hystero-epilepsy, and of positive mental aberration.

Prognosis.—This disease is rarely fatal, but it is always very stubborn, and often incurable. The patient grows anæmic and she tires on the slightest exertion. Very soon nerve-exhaustion with its protean symptoms sets in. She takes to her back and becomes a sofa-ridden invalid. If the patient has contracted the habit of taking stimulants or anodynes, her chances for recovery will be greatly lessened.

Treatment.—The pelvic organs should be carefully examined, and any discoverable lesion of the womb and of its annexes be remedied. Pelvic engorgement must be met by keeping the bowels soluble, by scarification of the cervix, by large vaginal injections of water as hot as can be borne, and

by vaginal suppositories of belladonna and by rectal ones of iodoform. Tenderness and hardness in either broad-ligament is first treated by applications of a strong tincture of iodine, both to the roof of the vagina and to the skin overlying the ovarian regions. Flying blisters may also be placed there with benefit. Sexual intercourse should not be indulged in, unless the desire for it be strong or there be a possibility of conception, for, by the prolonged rest which it gives to the ovaries, pregnancy usually brings about a cure. The patient should keep on her back during her menstrual period; but, while rest in the recumbent posture should be taken morning and afternoon, she should be encouraged to move about and exert herself in some light household work, yet not to over-fatigue herself.

As far as medicines are concerned, those should be chosen which lessen the engorgement of the reproductive organs. Thirty grains of potassium bromide and ten drops of tincture of digitalis, given in compound infusion of gentian before each meal, will tend to quench all erectility of these organs. After the patient has been kept for some time on these anaphrodisiacs, alteratives will come into play. Very good ones are ammonium chloride and mercuric bichloride, which can be advantageously administered after the following formula:

R. Hydrargyri chloridi corrosivi,	gr. j-ij.
Ammonii chloridi,	ʒij-iv;
Misturæ glycyrrhizæ comp.,	fʒvj.—M.

S.—One dessertspoonful in a wine-glassful of water after each meal:

The paregoric in this mixture helps to control the aches; the antimony adds its quota to the needed alterative action; and the licorice disguises the harsh taste of the ammonium chloride.

Another very excellent alterative and nervine is the chloride of gold and of sodium. It is best given in pill, and after each meal, in doses of from one-eighth to one-quarter of a grain.

As there is in this disease a craving after stimulants and anodynes, which often degenerates into intemperance and into

the opium-habit, the physician should be very careful how he prescribes such remedies, reserving their use wholly for emergencies.

In plethoric cases marked with menorrhagia, iron is hurtful, but in amæmic cases with scant menstruation it rarely fails to do good, especially when given conjointly with arsenic. An excellent combination is one part of Fowler's solution of arsenic to nine of the syrup of the ferrous iodide. Beginning with ten drops after each meal, the patient increases the dose daily by one drop until thirty drops are reached. She then continues this last dose, as long as it does good or it can be borne. In stubborn cases a sea-voyage may prove of lasting benefit.

The best of all treatments, however, and by far the best, is that devised for nerve-exhaustion by S. Weir Mitchell, which goes by the name of the rest-cure. It consists of prolonged rest in bed and seclusion from friends, in massage, electricity and muscular movements, and in a diet consisting largely of milk. By this treatment the circulation of the blood is made equable, and the ovaries and other pelvic organs are thus relieved of their turgescence. I have had wonderful cures from this treatment, and can recommend it with the utmost confidence. Bed-ridden patients have been restored to health, and chronic invalids returned to society.

Once in a while, lasting tissue-changes take place in the ovaries which medication cannot reach. The question then comes up, whether the woman shall be doomed to drag out the rest of her menstrual life burdened with distressing ovaralgia, with crippled locomotion, and with pelvic aches and pains and throbs; or whether the source of all these mischiefs, the ovaries themselves, shall be extirpated. This is a very important question, and the removal of these organs should not be decided upon without careful deliberation, and without the conviction that the disease is otherwise incurable.

PROLAPSE OF THE OVARY.

This displacement of the ovary is almost always one of the lesions of chronic ovaritis, and as such might have been discussed under that general heading. But, as it displays certain symptoms peculiar to itself, and needs a special treatment aside from the general one, it seems to me best to describe it by itself.

At every monthly period the ovaries become turgid with blood, and from their weight sink low down. They can then be often felt, and even outlined, in Douglas's pouch. When this congestive period is over, they discharge their over-freight of blood and again float up out of reach. Unfortunately, however, they sometimes keep turgid—blood-logged, so to speak—and consequently become permanently displaced. Accompanying this dislocation there will generally be some uterine lesion, which will stand in the relation either of cause or of effect.

Nor could it very well be otherwise, for very close is the vascular and nervous kinship between the two—so close, indeed, that turgidity in the one means erectility in the other. Hence it is not always easy to decide, which lesion was primary, and which is secondary. When one ovary is displaced, it is usually the left one, because the left ovary, as explained under heading of ovaritis, is the one more liable to disease. When the both ovaries are displaced, the left one will be the lower and the more easily reached, because the left round-ligament is the longer and the left side of Douglas's pouch the deeper.

Causation.—Any condition tending to a lasting congestion of the reproductive apparatus, is very likely to lead to a descent of the ovaries. The causes, therefore, are the same as those of chronic ovaritis, to which subject the reader is referred.

Symptoms.—First and foremost is pain in locomotion. Since the ovary lies between the womb and the sacrum, it is liable at every step to be pinched between them. This pain is referred to the inguinal and sacral regions, and is of a sickening and an unnerving character. It often occurs suddenly,

and then runs down the corresponding thigh along the track of the genito-crural nerve. One of my patients would, while walking, be unexpectedly seized with such a pain, which would either momentarily cripple her, or else last so long as to compel her to call a carriage. Her left ovary, until cured by treatment, behaved like a loose cartilage in the knee-joint, and slipped down so low as to get pinched.

A second symptom is a throbbing pain while the rectum is loaded, and an agonizing pain during defecation. This arises from the grating of the hardened feces over those tender glands. In one of my own cases, rectal enemata or the presence of hardened feces kindled up sexual throbs of the most painful and exhausting character, which thrilled through the whole body for hours at a time.

A third symptom is painful coition, for the ovaries are now so low down as to be bruised by the male organ. A fourth, is gusts of pain radiating from either groin. Lastly, there is usually present a morbid state of the mind, accompanied by low spirits. I have seen suicidal tendencies evoked by dislocation of the ovaries, and relieved by their replacement.

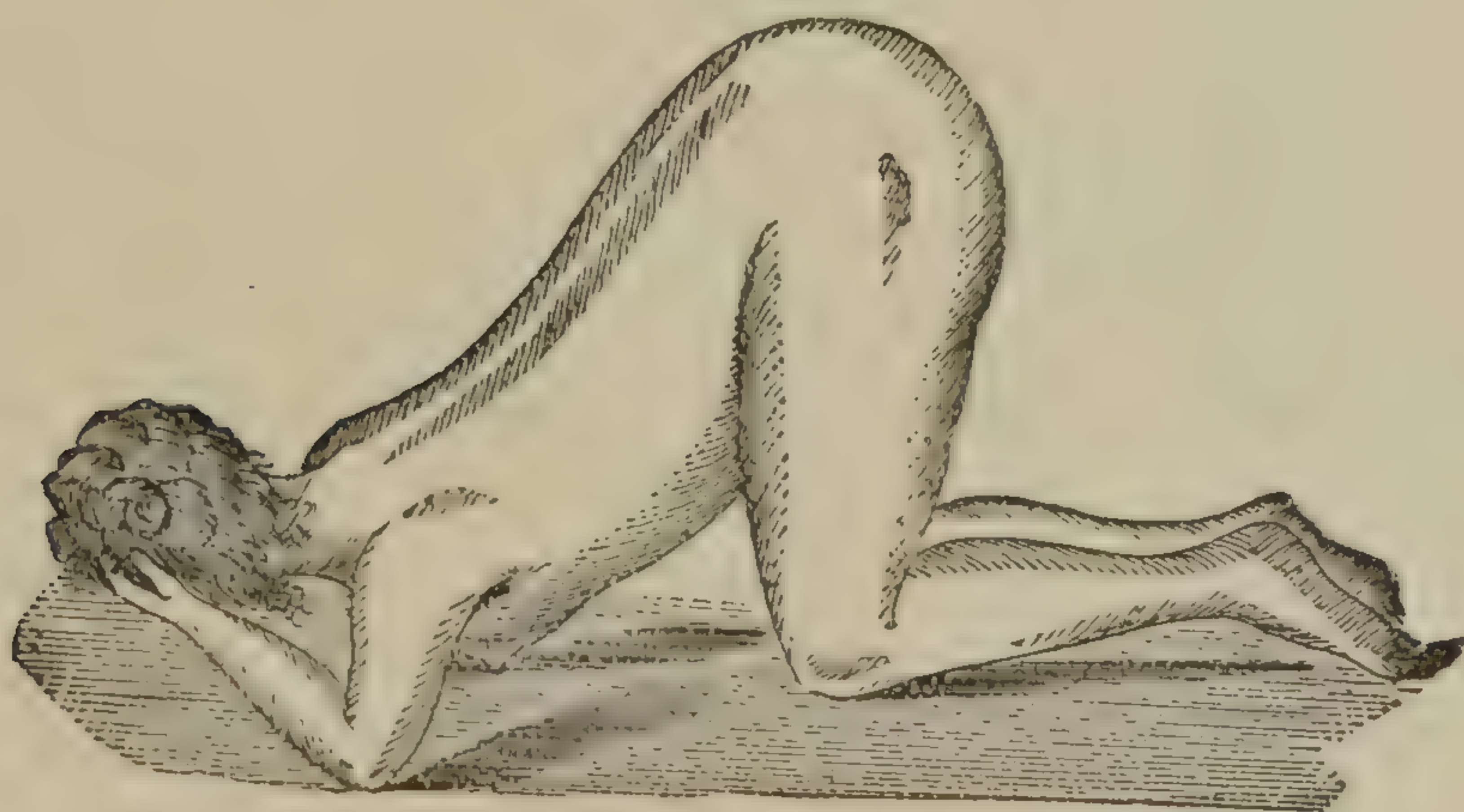
Diagnosis.—A digital examination will discover in Douglas's pouch, a very tender almond-shaped body on one side of the womb. If both ovaries are dislocated, two such bodies will be found; but the left one, for reasons previously given, will be lower down and more easily defined. Pressure upon one of them produces a sickening pain, like that when the testicle is squeezed. If the pressure be increased, and be so made that one of these bodies slips abruptly away from under the finger, such a thrill of indescribable pain darts through the groin, and down the side of the corresponding thigh, that the woman screams out and grows pale or becomes nauseated.

A dislocated ovary is sometimes mistaken for a pedunculated fibroid tumor of the womb, or for the fundus of a retroflexed womb. But the uterine growth is not sensitive to the touch, and the flexion of the womb can always be told by the sound.

Treatment.—Whenever the dislocated ovaries are congested, or they display signs of chronic inflammation, the same remedies will of course be useful as those for ovaritis. In addition, pessaries are important adjuvants, and especially in those cases in which the womb has a backward displacement. In the simple, uncomplicated cases of ovarian dislocation, in which the womb is in its proper position, a pessary often does more harm than good. To be of service, it must be long enough to obliterate Douglas's pouch, and the pressure on the rectum or on the sacral nerves then becomes unbearable. If, on the other hand, it be too short, the ovary slips down behind it and gets badly pinched. These requirements practically exclude the resort to Hodge's pessary or to any of its modifications, with the exception, perhaps, of Fowler's. In the long run, a thick, elastic and soft ring-pessary will do the most good, by offering a broad shelf on which the ovaries will sometimes, but not always, lodge. The air-cushion pessary, and Gariel's air-bag, will often answer the purpose better than any other, but, being of soft rubber, they soon become fetid and soon collapse.

A very excellent way of keeping up the ovaries is the knee-chest posture devised by H. F. Campbell, of Georgia (Fig. 96).

FIG. 96.



KNEE-BREAST POSTURE. (FROM CAMPBELL.)

Two or three times a day, or more frequently if needed, the woman unbuttons her dress, unhooks her corset, and loosens

her underclothing. She then kneels on her bed with her body bent forward, until her chest is brought down to the surface of the bed, while her head is turned to one side, and the lower cheek supported in the palm of the corresponding hand. Her knees should be about ten inches apart, and the thighs perpendicular to the bed. The trunk of the woman's body is now supported, like a tripod, by her two knees and the upper portion of her thorax. If she now refrains from straining and breathes naturally, a reversal of gravity will be established. With the fingers of her free hand she next opens the vulva. Air will rush in, distending the vagina, and the contents of the abdomen will at once sink toward the diaphragm. This will, of course, draw the womb and the displaced ovaries out of the pelvic basin. As it is rather awkward for a woman while in this posture to free one hand to reach her vulva, Campbell advises that, previously to taking this attitude, she should insert into the vagina a small glass tube, open at each end and long enough to project externally. This will leave an air-way, and dispense with the use of the fingers. After staying in this posture for a few minutes, the woman removes the tube and slowly turns over on her side, where she is to lie as long as she can. Such constant replacements are of great service, for they lessen the throbbing, and they give the limp ligaments a chance of shrinking and of keeping the truant ovaries at home.

In this intractable disorder an abdominal brace will sometimes do good. It may not cure, but it often blunts the edge of the aches, and thereby gives much comfort. By pressing the abdominal wall upward and inward, the brace forms a shelf on which the viscera rest, and thus it takes off a portion of the load from the womb and from its ovaries. By virtually narrowing the pelvic inlet, it lessens the space into which the bowels tend to crowd, and to that extent protects the pelvic organs. By swinging the pelvis backward, it makes the axis of the superior strait lie more obliquely to the axis of the trunk, and the sum of the visceral pressure now converges, not in the pelvic basin, but on the portion of the abdominal wall lying between the symphysis pubis and the umbilicus.

There is yet another treatment which, combined with the knee-chest posture, I deem the best of all. It is the rest-cure, to which I have before referred. After the patient begins to improve and to fatten, as she usually does under this treatment, she is taught how to replace the ovaries by atmospheric pressure, and the result is that, in my experience, they finally stay up. The explanation is as follows: By this treatment the circulation of nerve-fluid and of blood is equalized, and the ovaries, relieved of their turgescence, grow lighter. Then, the increased deposit of fat in the abdominal walls, in the omental apron, and around the viscera, to say nothing of the needful fat-padding in all the pelvic nooks and crannies, increases the retentive power of the abdomen. Finally, by its gravity the now fat-laden and overhanging wall of the abdomen tends to draw toward itself—that is to say, upward—the movable floor of the pelvis. The behavior is like that of a rubber ball half filled with air, in which bulging at one pole causes a corresponding cupping at the other. This explains the ascent of the womb in women who get fat after the climacteric.

In exceptional cases the hypertrophied glands keep heavy, and refuse either to go up or to stay up under any treatment whatever. The only known remedy will then be their extirpation—an operation which will be discussed under its appropriate heading.

HERNIA OF THE OVARY.

This is usually a congenital displacement, and, according to Englisch,* is, when double, almost always so. The ovary is then found either in the inguinal canal, or outside of this canal in the corresponding labium majus. The oviduct then accompanies it. When the hernia is acquired, the ovary, with or without the oviduct, makes one of the contents of the sac of an inguinal, a crural, a ventral, or an ischiatic hernia. Of these, the inguinal is by far the most common. Thus, out of 67 cases observed in 9 years by Langlon at the Truss

* *New Sydenham Soc.'s Biennial Retrospect*, 1871-72, p. 291.

Society, all were inguinal with one doubtful exception. Of these 67, 42 were congenital, 25 acquired.

The character of the lesion is told by the peculiar tenderness and nausea following pressure, and by the swelling of the tumor just before the menstrual flux. In one case mentioned by Routh * pressure on the tumor produced distressing sexual excitement; but this is an unusual symptom, although I have seen it produced by the pressure of hardened feces. It is not always easy to decide whether the displaced glands are ovaries or testicles; and repeated mistakes in regard to sex have thus been made.† So difficult, indeed, is it sometimes, that the microscope can alone settle the question.

Treatment.—In a reducible hernia, taxis and an appropriate truss comprise the treatment. If irreducible, a truss with a concave pad may be used to protect the ovary from injury. If the ovary be fixed by adhesions and it give much discomfort, it should be removed by operation.

* *Trans. Royal Medical and Chir. Soc., Lancet*, Jan. 28, 1882.

† Chambers, *Trans. London Obstet. Soc.*, 1881.

LESSON XXIX.

OÖPHORECTOMY: BATTEY'S OPERATION.

THERE are certain forms of diseases of women peculiar to the menstrual period of life. The attendant lesions are found either in the reproductive organs themselves, or outside of them in remote organs, but with such monthly exacerbations as show their participation in the catamenial excitement. They are always very hard to cure, and often prove to be wholly unmanageable until the climacteric has been established.

In this category may be classed fibroid tumors of the womb, chronic pelvic peritonitis and cellulitis, chronic ovaritis and ovaralgia, ovarian insanity, ovarian epilepsy, and, in short, all those phenomena or all those lesions which are embraced under the term of pernicious menstruation.

Fibroid tumors of the womb are, fortunately, pretty manageable. Usually, the womb, like a generous host, hospitably entertains them; but, once in a while, an unwelcome one presents itself which arouses all the resentment of that organ. If, then, it stubbornly resists all treatment, it slowly but surely destroys life, by the pain which it evokes and by the loss of blood it gives rise to. In such a case the woman is virtually bed-ridden from her floodings and sufferings, and she looks forward to the climacteric as her only hope. But the change of life is then always postponed for several years beyond the natural term—oftentimes so many years as to be overtaken by the death of the patient.

Now if, under such conditions, we could by any means so lessen the sexual or the periodic congestions of the womb, as to shorten the blood-rations of these growths, the presumption is that the hemorrhages would either stop or abate, that

the pains would become less cruel, and that the tumors would cease to grow. "You take my life," says Shylock, "when you do take the means whereby I live." The ovaries being then pre-eminently sexual organs, and, therefore, the means whereby these tumors live, *à priori* reasoning would suggest their extirpation.

Then, again, there are those cases in which, despite all treatment, the ovaries remain turgid with blood, acutely neuralgic, and to the last degree sensitive. They become dislocated and lie in Douglas's pouch, or irremediable tissue-changes takes place, attended by follicular or by interstitial degeneration. A woman with such a lesion is usually a helpless invalid, racked with atrocious pains, weakened by exhausting menorrhagia, and wholly unable to fulfill her duties as wife or as mother. Usually she seeks relief in anodynes and becomes a confirmed opium-eater.

There are also many distressing cases of salpingitis, or of pelvic peritonitis and pelvic cellulitis, which cripple a woman past all hope by monthly exacerbations. Such cases are by no means rare, and the woman, reduced to skin and bone, finally dies, because, in spite of all treatment, the inflammation is rekindled at every monthly period.

Further, there are cases of epilepsy which seem to come wholly from the sexual organs—cases with an ovarian aura, so to speak. The fits begin at puberty, very generally last through life, and end in impairment of the mind. Often the first convulsion is ushered in by the first menstruation, and, ever after, it is around ovulation as a storm-centre, that future eclamptic attacks revolve. Such an epileptic is the terror of her family and a valueless member of society. Generally she dies insane or with enfeebled mind, and, if she marries, she is very likely to transmit her infirmities to her children, either in the same form as her own or in kind.

Finally, what insane asylum does not hold incurable women, whose mental infirmities seem to depend wholly upon the act of ovulation? Some there are indeed, who never exhibit symptoms of insanity excepting during the monthly flux.

For these menstrual affections there is a remedy which, while yet in its infancy, promises much—one first proposed and performed by R. Battey, of Rome, Georgia. This able surgeon reasoned that, since these disorders are kept up by the monthly afflux of blood to the sexual apparatus, and therefore incurable during menstrual life, the only chance of immediate relief lies in the establishment of an artificial menopause. To bring about this change of life he advocated the extirpation of both the ovaries, and labeled the operation "*normal ovariectomy*." With this name fault has been found, because it does not cover the whole ground, for often the ovaries themselves, together with the oviducts, are found diseased. Now, since it is important to distinguish this operation from that of ovariectomy proper, and since the term spaying, which technically defines the character of the operation, is obnoxious from its association with the lower animals, the terms, oöphorectomy and Battey's operation, have been adopted.

In well-selected cases, this operation has been followed by wonderful results; but it has been greatly abused. By it, I have restored to health, cases of otherwise incurable fibroid tumors of the womb, cases of dysmenorrhœa and of menorrhagia, and cases of pernicious menstruation, in which the sufferers were reduced to the last degree of emaciation and feebleness. Out of eleven cases of ovarian insanity I have also cured six, and failed in three. In the remaining two cases, the operation has been performed too recently for the result to be determined.

To show in what classes of disease the operation can be performed successfully, I append a few cases:

My very first case of oöphorectomy was that of A. B., aged 33, a literary maiden lady, who began to menstruate when thirteen years old, but always with pain. Twelve years ago, sacral pains and menorrhagia began to trouble her, and her dysmenorrhœa grew worse. Before long, a constant and worrying pain developed in the left hypochondrium, which was unsuccessfully treated, first as a malarial affection of the spleen, and afterwards as some lesion of the left kidney. Apart from this pain, she, in the autumn of 1875, began to suffer at her monthlies with an excruciating pain in the left ovarian region.

It was a "twisting," a "rending," or a "bursting" pain, as she described it. One week before each monthly period, this pain began, and steadily grew worse, until it became unbearable. The flow then appeared, but with no abatement of her sufferings. It lasted not less than a week, and was very profuse. Next, followed a week of gradual mitigation of all these distressing symptoms. Thus three weeks out of every four were virtually spent by her in bed. Worn out by the loss of blood and by her acute pains, which were finally pronounced to be nervous in their character, she, in the autumn of 1876, consulted Dr. S. Weir Mitchell. He at once suspected a uterine origin, and, in October, 1876, asked me to see her.

The lady was pale, thin, and bloodless, with a face furrowed by acute suffering. I found a virginal cervix lodged on the symphysis pubis, and a sharply anteflexed womb imbedded in the hilus of a large and kidney-shaped fibroid tumor. Although the sound gave a measurement of but three inches, the tumor dipped down to the bottom of Douglas's pouch, and reached up to a point two fingers' breadth above the navel and to its left. The unexpanded cervix pouted out from one side of the tumor, bearing to it the same relation, as the nose bears to the face. The fibroid was plainly subperitoneal, and not amenable to treatment by enucleation.

Thereafter, Dr. Mitchell and I met frequently. We first tried ergot, which, although evoking very severe uterine tormina, increased the bleeding. Once, indeed, while under its full action, she flooded so profusely as greatly to alarm her friends and her attending physieian. Gallic acid did better, but it was not well borne by the stomach. Various other remedies, both local and constitutional, were resorted to without any benefit whatever. The only mixture which really did her any good was one of cinnamon water, containing in each tablespoonful ten grains of ammonium chloride, and one-twelfth of a grain of mercuric bichloride. This was given thrice daily, and on it she at one time seemed to thrive. But the improvement was transient, and she soon steadily began to go down hill. Worn out by her sufferings, she became a monomaniac on the subject, and gave neither Dr. Mitchell nor myself any peace, until she had extorted from us a promise to extirpate the womb. My chief objection to the operation lay in the encroachment of the growth upon the cervix, by which very little room was left for the application of a ligature.

While we were waiting for the summer to pass away, I happened to recall Trenholme's case (the other cases had not yet appeared in our medical journals), and we were led by his success to decide upon the removal of the ovaries.

No sooner was this decision announced to our patient, than she insisted upon having the operation performed at once. She indeed grew so morbidly importunate and so unreasonable on the subject, as to make her friends apprehensive of insanity, but we firmly waited for the warm season to end. On October 4, 1877, with the aid of Drs. S. Weir Mitchell, John Ashhurst, C. T. Hunter, B. F. Baer, and W. Heath, I removed the ovaries per vaginam. The right one looked healthy, but the left contained a small

cyst. Very trifling was the loss of blood during the operation; no vessel needed tying, and not a suture was put into the vaginal wound.

Following this operation, there was an immediate effacement of all the facial furrows of suffering. From that day she lost all those pains and aches which had embittered her menstrual life. No special surgical symptoms supervened, and her convalescence would have been uninterrupted, but for the reaction from the previous overstrain of her nervous system. An hysterical explosion spent itself in dyspnoea, in wandering pains, and in paroxysms of great prostration and of excessive nausea. By firm moral treatment she got the whip-handle of herself, and did well. For two weeks after the operation her linen was stained by a slight oozing of blood, but whether it came from the wound or the womb I cannot say.

On the 16th she went home with hardly a pain or an ache. On the 20th I found her up and sewing. November 19th she came to my office in the highest spirits, overflowing with joy and gratitude. She had walked at one stretch last week ten Philadelphia blocks, which make just one mile. She sleeps without anodynes, and has a keen appetite. December 7th she came to consult me about the merest show of blood, which began five days ago and has lasted ever since. It barely stains her underclothing, and needs no guard; but she feels anxious lest it should turn out to be an effort at menstruation. If it be indeed a monthly period, it is the first one since the operation, and the first one for many years which she has not spent in bed and in great agony. The Sunday following she walked fully one mile to church, joined without fatigue in its rites, and returned home on foot. So impressed was she by this proof of returning health, that she at once wrote me a grateful letter of thanks.

December 17th. To-day she consulted me about a soreness high up in the vagina, and about the slight weeping of blood, which had not yet stopped. For the first time since the operation I examined her, and found, on the site of the wound, a small caruncle or neuroma, which bled at the slightest touch, and was extremely sensitive. After blunting its sensibility with carbolic acid, I snipped it off. I took this opportunity to make a careful examination, and, to my surprise, found the womb astonishingly lessened in size, fully one-half. Instead of reaching to two fingers' breadth above the navel, the top of the tumor now lay half-way between the navel and the symphysis pubis. By February 20, 1878, she had gained twelve and a half pounds in weight, and was looking and feeling extremely well. The tumor is now so much reduced in size as to need searching after. That portion of it which filled up Douglas's pouch has disappeared. The rest lies behind and below the pubic arch.

April 4th, 1878. It is only from my previous knowledge of her case, that I was enabled to-day to discover a fibroid knob on the right side of her womb and about as large as a horse-chestnut. This information was gained by careful double palpation, for the sound gives a natural length to the womb. On December 6th, I found no further diminution in its size; but she suffers no inconvenience from it, and has had neither menstrual flux,

nor molimina. Since this date I have repeatedly seen her, but have not made any further uterine examination. She has not passed a single day in bed since her recovery from the operation, and practically is wholly cured of her disorder. Her menses have not returned, but their absence has not had any appreciable effect upon her appearance or upon her character. She is just the same in these respects as she was before the operation.

Since the foregoing case of oöphorectomy for fibroid tumors of the womb, I have had a number of others, and the results have been most gratifying.

B. C. was an unmarried lady of twenty-seven, who had great hemorrhage at her menstrual periods, and exquisite suffering not only at these times, but for a week before and after. Her physician, my friend, Dr. C. A. McCall, called me in to see her several times, but I was powerless to do her any good whatever. Her troubles seemed to start from turgid and neuralgic ovaries, for the womb showed no lesion whatever, and the pains radiated from each ovarian region. She had violent headaches, great emaciation, weighing sixty-seven pounds only, and exhibited mental disturbances which threatened insanity. I finally recommended the rest cure, but this did her very little good, although she was under the skillful supervision of Dr. S. Weir Mitchell, and fattened up to eighty-three pounds. It was one of the worst cases of pernicious menstruation that I have ever seen. Finally, after due deliberation, the removal of the ovaries was decided upon by us and proposed to her. She at once consented, and I performed the operation per vaginam, being aided by Dr. McCall and by two other medical friends. One stalk was tied with silk, the other with gut, which broke, and it was then crushed off with the *écraseur*. Her recovery was a slow one, being retarded by a small pelvic abscess, which burst through the incision, and discharged the knot of the silk ligature. Menstruation did not return, and she became wonderfully better, so much so as to astonish her friends, who were all ignorant of the nature of the operation. The secret has been well kept; her father, the other members of the family, and the servants in the house, are to this day unaware of what took place. Besides her mother and the physicians present, no

other soul knows that she is without ovaries. Nor is the slightest change of voice, of appearance, or of character, perceptible. She mingles in society, and is just as womanly and womanish as she was before the operation. She has simply reached the climacteric earlier than usual. Not long ago, Dr. McCall informed me that "she deemed herself perfectly well, and had told him he need never call again as a physician, but as a friend." She has a large circle of friends, some of whom have complimented me on the successful issue of my treatment, and have asked questions so hard to parry, that I trust the Recording Angel has dropped a tear over each entry of my answers.

E. F., an unmarried lady of thirty, had for many years a chronic ovaritis, which had terribly crippled her in mind and in body. During the acts of defecation and of menstruation, her sufferings were excruciating. At all times she was never free from gusts of ovarian pain, often unbearable. In addition, she flooded alarmingly at every monthly period. She could not walk a single block, and was virtually bed-ridden; while her mind lay on the narrow border-land which separates hysteria from insanity. After consulting in vain the very best medical advice this country affords, she put herself in my hands. I thought at first, that she might be cured by the use of the curette and by the rest-cure; but, although she gained flesh and improved up to a certain point under the treatment, she was very far from being restored to health. So, with the kind help of Drs. D. Hayes Agnew, E. W. Watson, B. F. Baer and T. V. Crandall, I operated under the spray. I first made a vaginal incision, and was able to reach the ovaries; but not, on account of adhesions, to bring them down. The operation was, therefore, finished by an abdominal incision, just long enough to admit two fingers. I found all the evidences of repeated attacks of peri-uterine inflammation. The ovaries were adherent to adjacent structures. The broad-ligaments were very tense, and adhesion-bands cords ran across the pelvic basin, as tightly drawn as fiddle-strings. The ovaries being detached were cut away, after the ovarian

ligaments, together with their corresponding oviducts, had been transfixed and tied on either side. The lady recovered promptly from the operation, and is now perfectly well.

G. H., a married lady aged thirty-one, was sent to me on a litter early in January, 1880, by Dr. I. N. Taylor, of Girard, Pa. She was terribly afflicted with prolapsed ovaries, which had baffled the best skill which this country can afford, and had reduced her to the most distressing condition imaginable. She was, when brought to me, merely a living skeleton, with her skin tightly drawn over her bones, and with a bed-sore which had defied all treatment. From no disease have I ever seen such emaciation, and such atrocious suffering. She had not been raised from her bed for seventeen months, and had not menstruated for over a year. There was excessive hyperæsthesia of the whole body, but especially of the ovaries, and of the ovarian region. So dreadful was her agony from the scraping of the feces over the ovaries, that, although very costive, she had not taken an aperient for over nine months, and once went thirty-five days without a stool. Every day or two, her husband would pass his finger up the rectum, and hook away balls of hardened feces. She was, however, never free from pain, unless under the influence of an anodyne, and had consequently fallen into the habit of taking morphia, which was administered hypodermically. All sexual desire had long been wholly quenched, and yet, by an unexplainable inconsistency, sexual throbs, of the most painful and exhausting character, thrilled through her body for hours at a time. They radiated from the ovaries, and were brought on by lying on her left side, by rectal enemata, by the introduction of the finger into the rectum, or by the presence there of hardened feces. To add to her sufferings, she had obstinate vomiting, and apparently rejected all the food given to her. Her arms were covered with the scars of hypodermic punctures, and her colon from its beginning to its end was packed with feces. It took me several weeks before I got all the hardened scybala dislodged, and finally only by the use of calomel, which smartly salivated her.

Owing to the excessive tenderness of the parts, it was exceedingly difficult to make a thorough vaginal and rectal examination; but I was able to discover the ovaries low down, and the womb retroflexed. The sensitiveness of these organs surpassed anything of the kind that I had ever before or since met with. No kind of pessary was tolerated, not even Gariel's air bags.

After the use of massage for about eight weeks, she was able to eat more, and, consequently, gained a little flesh; but her sufferings remained undiminished. So on the 28th of February, aided by Drs. R. A. Cleemann, B. F. Baer, Jacob Roberts, Houston Mifflin, and H. D. Ingraham, I removed both ovaries per vaginam. The operation was an easy one, and was performed under the spray. Convalescence was slow, and I had a tough time with the opium habit; but she ultimately triumphed over it, and got well, having gained many pounds of flesh.

I. J. was a married lady, thirty-eight years old, whose brain gave way from over-anxiety, and from over-nursing a sick child during the summer of 1875. The first token of insanity was night-terrors which began to afflict her for two or three days before the appearance of her catamenia. These steadily grew worse until I saw her in September, 1878. At that time she presented the following symptoms: Several days before the appearance of her menses, to use the language of her husband, who is a clergyman, "hallucinations on every subject take complete possession of her, and she becomes so violent as to need locking up." These attacks last during the continuance of the menses, and for a week afterwards. The remaining part of the inter-menstrual period, which lasts from a week to ten days, "she eats and sleeps enormously, like a ploughman," and exhibits mere traces of her hallucinations. She has been an inmate of several insane asylums, without benefit. Two distinguished alienists, however, held out hopes to her husband, that with the change of life reason would return. Deeply impressed with this opinion, and with the conviction that the climacteric

could alone cure his wife, and having heard of one of my cases of spaying, he brought his wife to me, for the sole purpose, if I deemed it best, of having an artificial menopause induced.

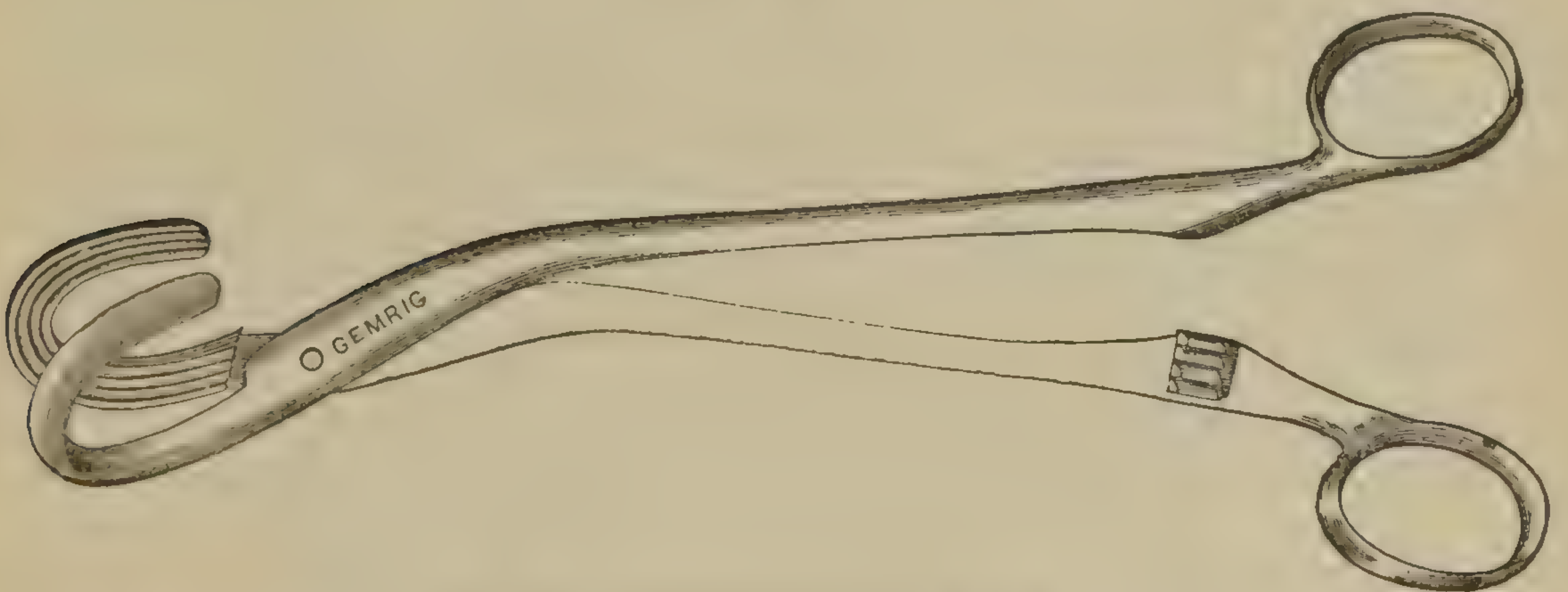
I found a congested and an hypertrophied womb, measuring 3.5 inches, and the left ovarian region exquisitely tender; the ovaries, however, could not be outlined. These were all the discoverable lesions, but, in view of the history of the case and of the opinion of the two experts, who had had her for several months under their charge, I consented to remove her ovaries.

This was accordingly done by a vaginal incision of November 23d, and I was aided in the operation by Dr. Joseph Parrish, Dr. Charles H. Thomas, Dr. B. F. Baer, and Dr. Angle. She did not have a single bad symptom following the operation, although she twice jumped out of bed, and had to be forcibly put back and held down. Her pulse and temperature never rose above the normal. On the eighth day, by dint of a little coaxing, I succeeded in persuading her to let me remove the single stitch that had been put in. After that she could not be kept in bed without undue violence, and I thought it best, as the less of the two evils, to let her get up. No harm whatever followed, but her mental condition did not improve, and she was again put in the skillful hands of Dr. John Curwen. In a few months her reason was restored to her, and she has ever since remained sane.

This operation has been performed both by the vaginal and the abdominal section. For some years I was a warm advocate of the vaginal method, which is usually easy of execution and which does not leave a tell-tale scar; but I have wholly given it up, because by this mode of operation adherent ovaries cannot be safely dislodged, the ovaries cannot always be reached, the vaginal wound cannot be dressed antiseptically, and because the abdominal mode is more simple and less dangerous. Only when the ovaries are dislocated and low down in Douglas's pouch would I possibly resort to the vaginal incision.

If the abdominal operation be performed, the incision should be made between the navel and the pubes in the median line, and not over each ovary, as advised by some surgeons. One great caution must, however, be observed, and that is not to wound the intestines. In a case of ovariectomy the cyst is in front of the intestines, and there is very little danger of injuring the latter. But in cases of oöphorectomy, no tumor being present, the omentum or the bowels lie in contact with the wall of the abdomen, and are very likely to be wounded by the knife, when the peritoneum is incised. Three times I found the bowels adherent to the abdominal wall, and in one I nicked the peritoneal coat. The incision should be long enough to admit two fingers. These, being passed behind the womb, are conducted to the ovary by gliding along the oviduct as a guide. Each ovary, together with its oviduct, is in turn brought up to the opening. It is then seized by a fenestrated polypus forceps and its stalk transfixed, tied on either side with fine silk, cut off, and dropped back into the abdominal cavity. The fenestra of the forceps should be large enough to admit the ovary without pinching

FIG. 97.



PRICE'S FENESTRATED FORCEPS.

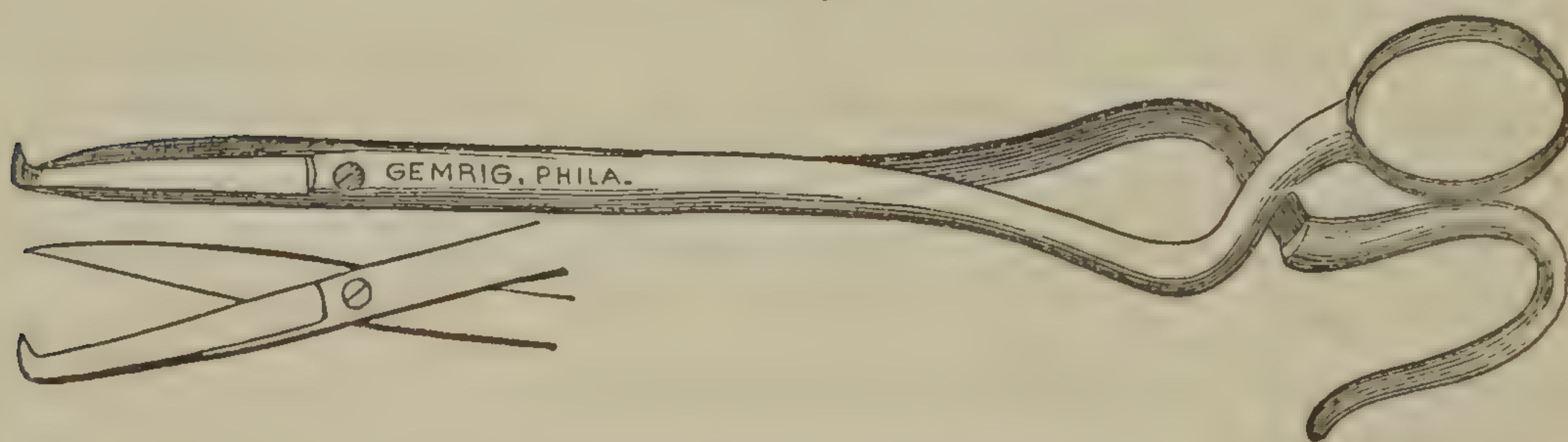
it. This advice is important, because compression of the ovary often produces collapse and shock, even when the woman is wholly anæsthetized. A very excellent forceps for this purpose is Dr. Joseph Price's fenestrated forceps, devised for clamping the trocar opening in the cyst (Fig. 97). Should

the stalk be so short, that ovarian stroma is left behind in the button of the stump, it should be destroyed by Paquelin's cautery, for it is astonishing how small an amount of this tissue will keep up, not only menstruation, but even menorrhagia. On the other hand, it will not answer merely to ligate the pedicles, without removing the ovaries. This has been tried, and not only did menstruation continue, but in one instance pregnancy took place.*

The dressing is precisely the same as in ovariectomy, and, like it, the operation should be performed with every detail of antiseptic surgery.

In the vaginal operation, the vagina should first be thoroughly cleansed with a strong solution of corrosive sublimate and the patient placed on her back and not on her side. I am convinced from experience, that the usual left-lateral position is a dangerous one, for, as soon as the peritoneum is opened, the air rushes out and in during every inspiration and expiration—an untoward circumstance which cannot happen in the dorsal position. A duckbill speculum is introduced, and the perineum pulled downward. The cervix uteri is transfixed by a strong thread, by which the womb is drawn downward and forward. The post-cervical mucous mem-

FIG. 98.



KÜCHENMEISTER'S SCISSORS.

brane is next caught up by a uterine tenaculum and snipped open for about an inch with a straight pair of scissors, of which I have found Küchenmeister's (Fig. 98) to be the best, as it holds, and cuts all it holds.

* Murphy, *British Medical Journal*, April 18, 1885, p. 787.

The index finger of the left hand is then passed in, and each ovary brought down to the incision, by the finger-tip hooked into the sling made by the oviduct. The ovary is seized by a fenestrated forceps and brought into the vagina, where its stalk is transfixed, by passing a needle armed with a double thread between the ovarian ligament and the oviduct, and each half is securely tied. The ovary and the fimbriated end of the oviduct are then removed, the ligatures cut off at the knot, and the stumps returned into the pelvic cavity. To close the vaginal opening one or two stitches will be needed, and finally the wound is covered with iodoform and the vagina gently packed with pads of carbolated or salicylated cotton.

Menstruation After Oöphorectomy.—Candor compels me to note one very serious drawback to the operation for oöphorectomy. For some inexplicable reason, the removal of both ovaries does not always bring about the desired "change of life." Now, it is not within the scope of this paper to discuss the theory of this unexpected menstruation; whether it be due to the force of habit, or to a law of periodicity, or to some fragment of ovarian stroma left behind by the operator, or to supplemental ovarian tissue contained between the peritoneal layers of the broad ligament, or to the existence of a third, or supernumerary, ovary. What we, as practical physicians, have to deal with, is the important and unexpected fact, that uterine discharges of blood sometimes keep on long after the ablation, or the supposed ablation, of both ovaries and oviducts. This being the case, it will be pertinent to inquire how far we may depend upon such an operation to put an end to the menstrual flux. In other words, what proportion of women who have lost both ovaries menstruate?

It is a fact worthy of note that during the week following the ablation of these uterine appendages, a sanguineous discharge usually takes place from the womb. This has happened in almost all of my cases of spaying; but it is in no wise a menstruation, but a metrostaxis set up by the irritation of the ovarian nerves, caused by the means adopted to secure the

pedicle. It is, therefore, more likely to happen when both ovaries are removed, for, then, two sets of ovarian nerves are injured by the ligature. Such fluxes, even when repeated once or twice, do not mean a continuance of menstruation, and are not to be looked upon as such.

In the two preceding editions of my book, I published some very elaborate tables, showing the proportion of cases of women, who menstruated after the removal of both ovaries, to those who did not. The average—about 11%—was a surprisingly large one; but so sure am I of the untrustworthiness of these statistics, although they cost me much time and labor, that I have omitted them in this edition. The source of fallacy seems to me to be, that every case of double ovariectomy or of double öophorectomy has not been published. Whereas, so opposed to every preconceived idea is the recurrence of menstruation after this wholesale extirpation, that every such case is deemed worthy of note.

Another very curious and unexpected fact elicited by these inquiries, is the recurrence of so-called menstruation, even after the removal of the womb itself, together with the ovaries. Storer* completely extirpated the womb and ovaries, yet on the nineteenth day a sanguineous discharge, lasting thirty hours, took place from the vagina. Burnham writes to me that after such an operation, "several months after the recovery, seemingly a perfect one, there occurred from the vagina quite a copious discharge, tinged with blood, which continued for one day, and was never followed by any recurrence." Dr. Queirel extirpated both womb and ovaries, leaving part of the neck only, "yet her menses returned four or five times."† M. Pean states that, in menstruating women, from whom the womb and both ovaries have been removed, menstruation takes place sometimes up to the menopause, from the small portion of the cervix uteri left behind. He contends also that, when the clamp has been used, there will be from the lower angle of the scar, for a few months after

* *Am. Journal of Medical Sciences*, January, 1866, p. 119.

† *Annales de Gynécologie*, January, 1880, p. 73.

the operation, a monthly oozing of blood, more abundant than that which often takes place after ovariectomy.*

After such facts as these, one is prepared to accept the further statement, that menstruation not only has gone on, but has become excessive, after cystic or other disease has invaded both ovaries and wholly destroyed them—at least, apparently so. Examples of this kind are furnished by Bühring and Beigel, and by Mayrhofer,† who quotes them. A very interesting case is told by M. Terrier.‡ He removed one ovary for cystic disease. The woman died two years after, and, although the remaining ovary was found wholly altered and cystic, she had menstruated up to the time of her death. Sinety makes an analogous observation,§ which, however, is beyond my reach. But the climax is capped by Atlee,|| who gives two cases in which, one ovary having been removed and the other so diseased as to need repeatedappings, each woman not only menstruated, but gave birth to a child.

The cause of this unexpected continuance of the menses, has been attributed by Kœberlé to a portion of ovarian stroma unwittingly left behind, but I think it is often owing to the existence of a third, or accessory ovary, or of patches of ova-bearing tissue lying in adjacent peritoneal folds, which are not included in the ligature. Kochs found a third ovary attached to a womb removed by him for cancer.¶ The specimen was exhibited at the Medical Congress held at Cassel, and verified by Dr. A. R. Simpson, who happened to be present.** Keppler had to extirpate three ovaries and three oviducts from a single woman,†† and this explains the occasional occurrence of pregnancy after double ovariectomy.

* *Archives de Tocologie*, January, 1880, p. 52.

† *Wiener Medizinische Wochenschrift*, Feb., 1875, p. 130.

‡ *Bulletin et Mém. de la Société de Chirurgie*, 1876, t. ii., p. 551.

§ *Bulletin de la Société de Biologie*; Séance Decembre 2, 1872.

|| *Atlee, Ovarian Tumors*, pp. 38 and 39.

¶ *Centralblatt für Chirurgie*, No. 49, p. 839.

** *Edinburgh Medical Journal*, January, 1879, p. 512.

†† *Allgemeine Wiener Medizinische Zeitung* (No. 36).

Puech has collected several such cases.* Out of six hundred female bodies examined by Weigel, twenty-three had more than two ovaries.† Liegois also gives examples of this abnormality.‡ Winckel lighted upon one such case, and has given a beautiful wood-cut of it;§ while the lamented Beigel, in three hundred and fifty post mortem examinations, found eight women with a third, or accessory ovary, containing true ovarian stroma.|| These accessory ovaries range in size from a hemp-seed to that of a cherry, and are usually attached by a slender stalk. They very generally lie on the boundary line, separating the peritoneum from the serous covering of the ovary. Beigel found three attached to one ovary, and Waldeyer as many as six. The latter also discovered ova-bearing stroma in the pedicle after he had removed an ovarian tumor. "On microscopic examination they were found to consist of normal ovarian tissues, and to contain Graafian follicles in every degree of development, as well as relics of corpora lutea, and follicles which had dwindled without rupturing. The author concludes that both conception, and also the pathological changes of normal ovaries, may originate in these bodies. They may also have a bearing on the recurrence of menstruation after the complete removal of the ovaries."

Out of over one hundred cases of my own, which recovered from the operation of the removal of both ovaries, in only three was there a recurrence of menstruation. In one, it lasted three years and then ceased. In another, operated upon one year ago, the monthly periods kept up for eight months; but they are now becoming irregular. In the third one, both ovaries were extirpated on account of excessive hæmorrhages

* *Annales de Gynécologie*, January, 1879, p. 74.

† *American Journal Medical Sciences*, October, 1886, p. 464.

‡ *Physiologie Appliquée à la Médecine et à la Chirurgie*.

§ *Die Pathologie der Weiblichen Sexual-Organe*; Leipzig, erste Lieferung, Tafel xxxiv.

|| *Obstetrical Journal of Great Britain*, July, 1877, p. 286, from *Wiener Medizinische Wochenschrift*, May 26, 1877.

from a supposed uterine fibroid, and menstruation ceased for about one year. It then returned, but the tumor proved to be a sarcoma, and the example is, therefore, not a fair one. Almost every ovariologist has met with this continuance of menstruation; but, in the large majority of these cases, it lasted for a few months only, then become irregular and finally ceased. On the other hand, Kœberlé's experience leads him to assert that the menstrual flux never returns, unless a portion of the ovarian stroma has been left behind, and that this may occur whenever the pedicle is short and the clamp is used. "In all my cases," he writes to Puech,* "there was complete amenorrhœa."

The actual percentage, then, of recurring menstruation, is not large enough to deter one from performing this operation for the purpose of establishing the menopause. Then, again, in most of these cases, the menstrual fluxes wholly ceased in a short time. But, granting that menstruation keeps on, will its continuance impair the success of the operation? Now, although menstruation, in the sense of a monthly flow of blood, may not cease, yet ovulation usually ends, and with it the ovular molimen. Consequently, such a metrostaxis is not a constitutional expression, but merely a local blood leakage, and it is, therefore, not so liable to be attended by that assemblage of nervous and congestive determinations, and by all those reflex symptoms, which unite to make up the molimen of pernicious ovular menstruation. To that extent, therefore, may we hope for benefit. Thus, in Battey's first case,† although an irregular uterine hemorrhage continued, the woman was cured of very distressing menstrual symptoms, for the relief of which the operation was undertaken. Trenholme's case of uterine fibroid proved a success in spite "of occasional but not regular discharges" of blood;‡ so also did Simpson's.§

* *Puech, Les Ovaires et leurs Anomalies*, p. 121.

† *Transactions of American Gynecological Society*, vol. i., 1877, p. 119.

‡ *Obstetric Journal of Great Britain*, Oct. 1876, p. 425.

§ *British Medical Journal*, May 24, 1879, p. 763.

Does spaying after puberty unsex a woman? So far as can be ascertained, it does not; at least, not more than castration after puberty unsexes a man. In the one, the ability to inseminate is lost; in the other, the capability of being inseminated; but, in both, the sexual feelings remain pretty much the same. Males who have lost their testes after the age of puberty, retain the power of erection, and even of ejaculation; but the fluid is, of course, merely a lubricating one. The amorous proclivities of the ox or of the steer are the scandal of our streets. Alive to these facts, oriental jealousy demands in a eunuch the complete ablation of the genital organs.* Not only are the testes, therefore, removed, but also the scrotum and the penis. Hence, to avoid the soiling of his clothes, every eunuch carries a silver catheter in his pocket. The seat of sexuality in woman has long been sought for, but in vain. The clitoris has been amputated, the nymphæ have been excised, and the ovaries removed, yet the sexual desire has remained unquenched. Its seat has not been found, because sexuality is not a member or an organ, but a sense—a sense dependent on the sexual apparatus, not for its being, but merely for its fruition. The physical and psychical influence of the ovaries upon woman has been greatly overrated. In the popular mind, a woman without ovaries is no woman. Even Virchow has gone so far as to say that “on these two organs depend all the specific properties of her body and her mind, all her nutrition and her nervous sensibility, the delicacy and roundness of her figure, and, in fact, all other womanly characteristics.”† This is true in so far as the ovaries are necessary for the primary development of woman, but not, when once she is developed, to her perpetuation as woman. Kœberlé, who had the large experience of eighteen cases of double ovariectomy, has written so fully on this subject, that I cannot do better than to quote him at

* *North American Medico-Chirurgical Review*, May, 1861, p. 500; *New York Medical Record*, June, 1870, p. 190; *Medical and Surgical Reporter*, April 24, 1875, p. 329.

† *Maladies des Ovaires*, par E. Kœberlé: *Extrait du Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques*, tome xxv., p. 487.

length.* “They go so far,” he says, “as to assert that castration, which takes from man his muscular vigor, the deepness of his voice, and the growth of his beard, has precisely the opposite effect upon the woman. The truth is, that the absence of the ovaries causes, in general, simply the same changes which attend the menopause; but these changes are not always so marked, and they never so wholly modify the body and the mind as has been asserted. As regards cases of congenital deficiency of the ovaries attested by autopsy, Puech has collected a sufficient number to warrant the following conclusions: ‘The absence of the ovaries does not necessarily entail the absence of the characteristics of puberty. At the usual time, the *mons veneris* becomes covered with hair, the pelvic basin enlarges, the haunches spread, the limbs grow plump, and the breasts develop, as if menstruation was about to be established. Further, absence of the sexual impulse, and indifference to persons of the other sex, are by no means inherent to this anomaly. The rebutting testimony, brought forward by Pears and Lancereaux, is based upon exceptional cases, explainable by their surroundings and by their physical sufferings. Contrary facts are far more numerous, and amply show, that sexual desire does not necessarily depend upon the normal development of the ovaries. This position is still further strengthened by the fact, that sexual desire is present in women who have passed the change of life, and that some young girls, long before the age of puberty, are addicted to masturbation. The plain inference therefore is, that the sexual appetite is, up to a certain point, independent of the capability of procreation, and can fully exist even when the sexual glands are absent. In my own experience, the extirpation of both ovaries, causes no marked change in the general condition of those who have been operated upon. They are women who may be considered as having abruptly reached the climacteric. Their instincts and affections remain the same; their sexual organs continue excitable, and their breasts do not wither up. These

* *Ibid.*

women do not grow fat, unless there is a previous tendency to stoutness. Abnormal growths of hair do not take place, and the tone and quality of their voices are not changed."*

In confirmation of these views Battey notes, in his cases of spaying, the persistence of aphrodisiac power. Nor in any of them was "there a loss of the womanly graces, but, on the contrary, the patient gains flesh and becomes more attractive."† Analogous opinions are expressed by Hegar‡ and by Wells. The latter, indeed, reports the case of a teacher of singing, who wrote to him three months after the operation: "My voice is stronger; I can sing the upper notes with greater facility than formerly. I can sing from A up to C natural."§ Peaslee writes: "Double ovariectomy, as a rule, is not followed by any loss of the special characteristics of woman; the only decided physiological change being a final cessation of menstruation, as well as of ovulation. Three of my own patients, married and highly educated ladies, after recovery, again became splendid examples of womanhood, enjoying the most perfect health, and retaining all their former attributes of mind, as well as of body, and with undiminished sensory capacities in their matrimonial relations."|| Atlee reports a case of double ovariectomy, in which marriage took place after the operation, as "the sexual feelings were normal."¶ Six months after an analogous operation, Verneuil found his patient with well-developed breasts and decidedly fatter. "She, in fact, seemed far more of a woman than before the operation."** These opinions are amply confirmed by the history of my own patients, who are not conscious of any physical or psychical changes whatever, and who also have become better-looking. Their in-

* Loc. cit.

† *Transactions American Gynecological Society* 1876, p. 119.

‡ *Castration der Frauen*, von A. Hegar.

§ *Diseases of Ovaries*, New York, 1873, p. 448.

|| *Diseases of the Ovary*, p. 530.

¶ *Ovarian Tumors*, p. 35.

** *Annales de Gynécologie*, Aout, 1877, p. 146.

instincts and affections remain the same, their sexual organs continue excitable, their breasts do not wither up, and they are no less mothers or wives.

Yet, to be impartial in this matter, it is my duty to give the following adverse testimony: The committee appointed in 1886 to investigate the "Woman's Hospital," at Liverpool, England, stated that they did not find that these women became in any way masculine in appearance, but that, in a considerable proportion, there was "a distinct loss of sexual feeling to such an extent, as to cause serious domestic unhappiness in not a few instances."

The operation of spaying is yet in its infancy, and time is needed to develop its resources. From being performed too frequently and without sound warrant, it is in danger of falling into disrepute. Yet, I cannot but feel that, in carefully selected cases, it will prove the sole means of curing many mental and physical disorders of menstrual life, which have hitherto baffled our science, and are a standing opprobrium to our profession.

LESSON XXX.

EXTRA-OVARIAN CYSTS.

THERE is a class of tumors which, while not ovarian, lie so near to the ovary as often to involve it, and usually need precisely the same treatment as cysts of that organ. In their extirpation the ovary is almost always also involved. This close anatomical relationship makes it needful to describe them in conjunction with ovarian tumors. They comprise Cysts of the Parovarium, Cysts of the Oviducts, or Fallopian Dropsy, and Cysts of the Terminal Vesicle of the Oviduct, often called the Hydatid or Vesicle of Morgagni.

CYSTS OF THE PAROVARIIUM.

These are formed from the dropsical distension of one of the tubules of the parovarium, or organ of Rosenmüller, which lies between the folds of the broad ligaments and between the ovary and the oviduct. Usually, one tubule alone is affected, and the cyst is then unilocular; but exceptional cases have been met with, in which several of the tubules have become dilated, and the cyst is then bilocular or even multilocular.* These cysts are often called cysts of the broad ligament.

By examining cysts in their early stage, Albert Doran has demonstrated that "the vertical tubes of the parovarium are lined with epithelium, sometimes ciliated, but oftener cubical, the original, primitive form of the tubes of the Wolffian body. From these tubes and from the hilum of the ovary, full of Wolffian relics, spring the multilocular papillary cysts which give so much trouble to the operator. At the outer end of

* "Bursting Cysts of the Abdomen," by Wm. Goodell, *Trans. American Gynæc. Soc.*, 1881, p. 231.

the horizontal tube of the parovarium, is a cystic dilatation which is lined with a structure resembling endothelium. Apart from the parovarium, between the folds of the broad ligament, minute cysts are frequent. It is from these and from the terminal cyst of the parovarium, that the simple unilocular so-called parovarian cyst arises. The terminal cyst of the Fallopian tube never attains a large size, and no true cysts of the broad ligament appear, when young and minute, to arise from that tube."*

These cysts are more commonly found in young women. From the thinness of their walls and the limpid character of their fluid, they yield very marked waves of fluctuation, which are equally distinct at every point. They can usually be distinguished from ovarian cysts, either by a lack of that tenseness so characteristic of the latter, or by varying conditions of tenseness and flaccidity, as if the fluid were sometimes absorbed more quickly than at other times. They also grow more slowly than the ovarian cyst, and do not exert the same profound constitutional impression. The *facies ovariana* is absent, and the health of the woman may in no wise be disturbed. They, indeed, in the majority of cases, seem to do no harm, and are merely annoying from their bulk. The fluid they contain is, with rare exceptions, as limpid and clear as spring-water, but with refractive powers so high, as to magnify the fibres of the wooden pail into which it has been drawn off.

Owing to their very thin walls and delicate structure these cysts, on very slight provocation, are liable to burst. Yet on account of the blandness of the contained fluid, this accident is rarely followed by collapse or by peritonitis. The rent heals up and the cyst usually refills; but in a large proportion of cases it does not, and the woman remains permanently healed.† Sometimes they are pedunculated, but often they lie between the two folds of the broad ligament, having no proper stalk.

* *British Med. Journal*, Oct. 21, 1882, p. 792.

† "Bursting Cysts of the Abdomen," by Wm. Goodell, *Trans. American Gynæcological Society* 1881, p. 226.

Cysts of the broad ligament must not be confounded with those ovarian cysts, which, instead of growing free in the peritoneal cavity, develop between the two layers of the peritoneum—intra-ligamentous ovarian cysts, as Garrigues very aptly calls them in his paper on the “Diagnosis of Ovarian Cysts.”* In this excellent paper, from which I have gleaned much, he says, that sometimes the anatomical relations are so lost that nothing short of a microscopic examination of the outer epithelium can determine the character of the cyst. Thus, “a tumor covered with columnar epithelium is ovarian, and cannot be anything else; while the cyst of the broad ligament, being covered with peritoneum, has flat peritoneal endothelium. In cases of intra-ligamentous development of an ovarian cyst, the lower portion is covered by peritoneum, but the upper part has the columnar epithelium characteristic of the ovary.” There are, however, certain macroscopic characteristics which will generally tell the nature of the cyst. For instance: usually, by a careful examination, the corresponding ovary will be found either stretched out and spread out in the wall of the sac, or, what in my experience is more common, elongated and forming a part of the stalk. These cysts are in the vast majority of cases monocysts, while unilocular ovarian cysts are very rarely, if ever, met with. Their walls are thin, of a conjunctival blue, and fretted with a delicate network of blood-vessels. The oviduct is usually imbedded in the cyst, and, by transmitted light, its fimbriæ can be traced out in the cyst-walls, in long fronds as delicate as those of dried and pressed sea-weed. Then, again, the peritoneal coat is readily stripped off. On the other hand, in an ovarian tumor, the oviduct is not ordinarily incorporated in the cyst-wall; in fact, a meso-salpinx usually exists; and, further, the peritoneal coat, being nailed down to the cyst-wall proper by the cicatrices of ovulation, is not capable of being stripped off.

Treatment.—Since these cysts do not ordinarily affect the general health or grow to a very large size, they should, as a

* *Am. Journ. of Obstetrics*, April, 1882, p. 394.

rule, be let alone. Whenever grounds for interference arise the cyst should be aspirated, for sometimes after being wholly emptied it does not refill. Should, however, the fluid return, the cyst must be extirpated, and in precisely the same way as an ovarian tumor. There is one danger attending tapping, which Bantock has pointed out—that of the degeneration of the cyst into malignant papilloma. When it is without a pedicle, it will have to be carefully enucleated from between the folds of the broad ligament, which then cover it. If this cannot be done, all of the cyst possible should be removed, the edges stitched to the abdominal wound, and a drainage-tube put in. This is the advice ordinarily given, but I have not yet met with a cyst of this variety which could not be removed. Were such a one to occur in my practice, I should be tempted to remove all of the cyst possible, and to close up the adherent portion in the cavity of the abdomen, without resorting to a drainage-tube. The fluid secreted by a parovarian cyst is so bland, that I believe no mischief would arise. The late Washington L. Atlee was accustomed to make merely a large circular opening in the cyst, without attempting to remove it.

CYSTS OF THE OVIDUCTS, OR FALLOPIAN DROPSY.

These tumors may contain either fluid or pus. In the former case the cyst is called hydro-salpinx; in the latter, pyo-salpinx. They are caused by salpingitis, or inflammation of the oviduct, which exists often per se, either from gonorrhœal infection, or from septic germs. The distension of the tube is due to the occlusion of each of its ends. Thus, by pelvic inflammation, the fimbriæ become glued to the ovary, sealing up the ovarian end, while an endometritis closes the uterine opening. In addition to the dropsy of the tube, I have repeatedly met with small cysts, or bladder-like bodies, outside of the tube proper, very analogous to those found on the umbilical cord.

This affection is by no means an uncommon one, every age being liable to it, and it is often the unrecognized cause

of ill-health. Since Tait first called the attention of the profession to the frequency of the disease, and to the means for its cure, many cases have been reported, in which obscure pelvic symptoms were cured by the removal of the ovaries and of the oviducts—the uterine appendages, as they are called.

Diagnosis.—This is difficult, because the symptoms are those of pelvic peritonitis or of pelvic cellulitis, the disease of the oviduct being usually associated with that of the broad ligament. In some cases the womb will be found movable, with a sausage-like tumor behind it; the diagnosis is then easy. Usually, the symptoms are negative, and the diagnosis is based upon constant groin-pains and recurring attacks of pelvic inflammation.

Treatment.—Like hydrocele of Nuck's canal, hydro-salpinx occasionally heals spontaneously, but more frequently it will need aspiration, together with injections of iodine or of carbolic acid. When pus is present, absorption probably never takes place, and an operation will be needed. If the symptoms are grave enough to warrant an exploratory incision, and dropsy of the tubes be discovered, both the tube and its ovary should be extirpated, for, in the great majority of cases, the corresponding ovary will have undergone follicular or interstitial degeneration. Unless there are very good reasons for adopting a different course, both ovaries and tubes should also be removed, because the sound ovary, together with its tube, is liable to become diseased. The incision should always be abdominal, and not larger than to admit two fingers. The broad ligament is transfixed, between the tube and the ovarian ligament, by a double ligature and tied on either side. The operation is, in fact, analogous to that of oöphorectomy. When the tubes contain pus, they are liable to become adherent to the sigmoid flexure, to the rectum, or to the small intestines, making their removal very difficult—sometimes, indeed, impossible. The separation of such adhesions requires the greatest care and delicacy, and if any of the pus escapes into the abdominal cavity, it must be carefully washed out, and a drainage-tube put in.

CYSTS OF THE TERMINAL VESICLE OF THE OVIDUCT.

A little bladder-like body, not larger than a pea, is often found hanging by a thread-like stalk from one of the fimbriæ of the oviduct. It is a relic of foetal life, being probably the remains of the Wolffian body, and sometimes goes by the name of the hydatid or vesicle of Morgagni. The walls are very thin and covered by peritoneum. What rôle these vesicles play in the economy is uncertain, but they have been found to undergo cystic degeneration. They rarely attain to a size larger than that of an orange, and then either remain stationary or else burst. I have met with several examples of cysts which, after reaching the above size, did not grow any larger. I have also met with one case in which, after attaining the bulk of a small apple, the cyst burst, and immediately refilled to burst again and again, at intervals of from four to six weeks.* The collapse of the sac was attended each time by colicky pains, but of no great severity.

Other small cysts I have met with, which either burst under the pressure of the examining finger, or were designedly burst by bimanual pressure. These, I am disposed to think, were cysts of the terminal vesicle of the oviduct. These cysts are of but little surgical importance, as they rarely need operative interference. If such should arise, they are to be treated by aspiration, and, if this fails, by extirpation.

SOLID TUMORS OF THE ROUND LIGAMENT.

These are occasionally met with, and usually on the right side. They belong to the connective-tissue group, being either myoma, fibroma, or sarcoma. They form at any point of the round ligament, and may therefore be either intra-peritoneal, intra-canalicular—that is, in the inguinal canal—or extra-peritoneal. The symptoms are those arising from pressure, and are not at all diagnostic. The only treatment of these tumors is their removal, but, as their growth is very slow, they are not to be touched unless the symptoms become exacting.†

* "Bursting Cysts of the Abdominal Cavity," by Wm. Goodell, *Trans. Amer. Gynecol. Soc.*, 1881, p. 228.

† *Medical Times and Gazette*, Dec. 1, 1883.

OVARIAN TUMORS.

The morbid growths of the ovary are conveniently divided into the solid and the cystic.

The solid ones are either benign, under the form of fibroma, or malignant, being then either carcinoma or sarcoma.

FIBROID TUMOR OF THE OVARY.

Fibroid degeneration of the ovary is so rare a form of disease, as to be denied by excellent authorities, who contend, that all the cases reported under that term were pedunculated uterine fibroids, which had so grown around, and so involved the corresponding ovary, as to be mistaken for an ovarian fibroid. Yet, while such mistakes have undoubtedly been made, there can be no question, that ovarian fibroid does occasionally present itself as a rare form of disease.* Out of 204 cases of ovariectomy thus far performed by myself, I have met with 4 undoubted cases of ovarian fibroid. The tumors weighed respectively 2, 3, 4, and 15 pounds, and in each, with the exception of the first, abdominal dropsy was the prominent symptom. All but one of these cases promptly recovered.

According to Francis Delafield,† “The structure of a fibroid of the ovary resembles that of the ordinary fibroid tumors of the uterus; that is, they are composed of connective tissue and smooth muscular fibre. The tumor, therefore, is a myo-fibroma. There has been some question, whether ovarian tumors ever contain smooth muscle, but the best authorities now admit that it does sometimes exist in such tumors.”

Occasionally these tumors arise not from a general hypertrophy of the whole ovary, but from a nodule or a tumor growing in and from the stroma of the ovary. Solid ovarian fibroids are of slow growth, and they rarely attain a large size. When, however, they are of the geode variety, with numerous cystic cavities, they grow rapidly and may reach enormous proportions.

**Brit. Med. Journ.*, March 18, 1882, p. 384.

†*Boston Med. and Surg. Journ.*, Nov. 17, 1881, p. 461.

Diagnosis.—The only other abdominal tumor, for which it is very likely to be mistaken, is a pedunculated fibroid tumor on the peritoneal surface of the womb, and with our present knowledge it seems impossible sometimes to tell them apart.

When they float about in ascitic fluid, they often give the sign of ballottement in a very perfect manner. From carcinoma of the ovary they can generally be told by their smooth surface.

Prognosis.—Fibroid tumors of the ovary grow so slowly, that, like pedunculated fibroid tumors of the womb, they ordinarily do not attain a very bulky size. When the climacteric is reached, they tend, like the latter, to stop growing and to undergo a calcareous degeneration. More often, however, they cause by their presence a dropsical effusion of the abdominal cavity, which has to be repeatedly drawn off; and it is for this reason that they usually have to be extirpated. They are removed precisely in the same way as an ovarian cyst, and the prognosis is equally good, but they are liable to have short and broad pedicles, which need to be tied very carefully in sections.

MALIGNANT DISEASES OF THE OVARY.

These affections are either primary or secondary. When secondary, they follow analogous disease of the womb or of the pelvic structures. When primary, they appear under different forms, as in other portions of the body, being either encephaloid, scirrhus, melanotic, or papillary. Colloid cancer of the ovary may be practically excluded, because it is of extreme rareness. The term colloid, when applied to ovarian cysts, refers more to the gluey consistency of the contained fluid, than to the question of malignancy. In my experience, the most common form is that of papilloma, which, however, like villous growths elsewhere, is not always malignant. I have removed papillary cysts and villous growths of the ovary, yet the subsequent history of the cases proved that the tumors were benign. The only macroscopic distinction between the benign and the malignant form, which I have

hitherto attempted to make is, that, in the malignant form, papillary growths will be found in patches upon adjacent structures, or else the womb and the broad ligaments are also involved in one cauliflower-like tumor. But Tait observes, that he has had two cases of ovariectomy in which he left large masses of papilloma, fixing the womb, yet in each case these masses wholly disappeared and the patients are both in perfect health.*

There is, however, no question that malignancy lurks in many ovarian cystomata, which present to the naked eye an innocent appearance.

The patient recovers promptly from the operation for their removal, but dies a few months later from cancer of the peritoneum or of other organs. Every ovariectomist has met with such examples. In one of my own cases, in which not the slightest sign of malignancy was apparent, the patient wholly recovered from the operation. Shortly after her convalescence, an effusion took place in the right pleural cavity. The chest was tapped three times before her death, which was due to cancer of the liver, and of the broad ligament at the site of the ablated ovary. In my first case of ovariectomy, one in which the clamp was used, menstruation took place regularly for several months from the cicatrix, which within a year became affected with cancer. Another case died from metastatic cancer of the liver, nearly two years after a double ovariectomy. Cohn states that one out of every six ovarian tumors in Schröder's practice proved to be malignant.†

Both ovaries are usually involved in cysto-carcinoma, and this fact should be borne in mind in making a diagnosis. From the marvellous changes often produced progressively in the epithelial linings of ovarian cysts, by which they are transformed into tufts of villous cancer, Tait inclines to the opinion that their growth is associated with a tendency towards malignancy. He and Bantock both believe that tapping hastens on this degeneration, and that, after an acci-

* *Diseases of the Ovaries*, 4th Am. ed., p. 147.

† *American Journal of Obstetrics*, April, 1886, p. 398.

dental rupture of such a cyst, the peritoneum will be found studded with patches of papillary cancer. Hence they argue that ovarian cysts should never be tapped, and that they should be removed in the earlier stages of their existence, before these malignant transformations have taken place.*

Diagnosis.—Since, as has been shown, this cannot always be made out, even by the eye, after the removal of the cysts, it follows that, in a large proportion of cases, the malignant character of the degeneration cannot be recognized. There are, however, certain symptoms pointing to malignancy, which will often throw much light. These, in the order of their frequency, are—

(a) The presence of ascitic fluid, or of œdema of the lower extremities, when the tumor is too small to produce such pressure symptoms.

(b) General cachexia, rapid emaciation, and grave constitutional disturbance, out of all proportion to the size of the tumor.

(c) The hardness and solidity of the tumor, coupled with a nodulous and irregular surface.

(d) The concurrent development of two ovarian growths.

(e) The retraction and burying of the cervix in the vaginal vault.

(f) Pain in stabs, starting from the groin and running down the inside of the thigh. But pain is not a trustworthy symptom, as it is often absent, especially in cysto-carcinoma, and it may be caused by benign growths as well.

Treatment.—Whenever no doubt exists as to the malignancy of an ovarian growth, an operation, looking to its removal, should not be urged by the physician. On the other hand, since a positive diagnosis on this point is rarely attained, and since cancer of the ovary tends for a long time to remain localized, whenever a suspicion of malignancy exists, ovariotomy should be performed early, before adhesions have been contracted with neighboring structures. In such a case I should incline to burn off the pedicle in preference to using the ligature.

* *Op. cit.*, p. 148.

In those cases, in which, on account of adhesions, no operation is justifiable, palliative treatment can alone be resorted to. This comprises the removal of the ascitic fluid or of the contents of the cyst by the aspirator, whenever the pressure becomes uncomfortable. Symptoms should be treated, and, that of pain being the most urgent, opium will be needed up to the last in increasing doses.

DERMOID CYST, OR PILIFEROUS CYST OF THE OVARY.

A dermoid cyst is a congenital tumor, having a wall composed of elements like true skin, with its appendages of hairs, sebaceous glands, etc., and it contains teeth, hair, bone, cartilage, muscle, and a cheesy material very like vernix caseosa. These cysts are solitary, two never being found in the same person, and, further, they are always unilocular. They are either external or internal—that is, they affect either the surface of the body or else the cavities of the body, as “under the tongue, in the pharynx, œsophagus, cranial cavity, peritoneal cavity, lung, ovary, testis, bladder, and kidney.”* No tumors are more curious, and none are more puzzling to explain. The theories accounting for their origin are very remarkable, and are as follows: (*a*) Excess of formative nisus. (*b*) Parthenogenesis, or virgin birth; that is to say, imperfect imitation of transmitted fertility—a property peculiar to many insects, by which, without any renewal of fertilization, successive generations of procreating individuals start from a single ovum. (*c*) Inclusion of abnormal structures, where there is a dipping in of the epiblast to meet the hypoblast during foetal life, and the pinching off of the same. (*d*) Foetus in foetu—viz., the inclusion of an imperfectly developed ovum within another which matures perfectly. (*e*) Hypererchesis; which means that “the ovum has in it the origin-buds of certain tissues, which under exceptional hypererchetic action may go on to the rudimental formation of these tissues without a fusion with the male germ.”† Ac-

* Elsner, *Dublin Journal Medical Science*, May, 1882, p. 380.

† *Diseases of Ovaries*, by L. Tait, 4th ed., p. 177.

according to Elsner, who has written last on this subject, and to whom I am indebted for much information, "dermoids occur externally and internally in places where the epiblast dips down to meet the hypoblast, and where, by processes of grooved involution, new bodies are formed, such being, first in order, the testicle and ovary, and that they are therefore all (without exception) embryonal in their first structure."

Symptoms.—These congenital tumors begin early in life, and usually remain dormant until puberty. Then, the periodic congestions of menstruation usually stimulate them into growth. Sometimes they need the increased vascularization of pregnancy. They are more liable than ovarian cysts to inflammation and suppuration, but they grow much more slowly, and very rarely reach the large size of the latter. They are also very liable to contract adhesions to every structure they touch, making their extirpation very difficult and sometimes impossible. Often they create pain out of all proportion to their size. Occasionally, they break and empty their contents, through fistulous communications with the intestines, bladder, or the abdominal wall. But, collapse of the usually thick walls of the cyst does not take place, and a cure results far less frequently than in pelvic abscesses, which empty themselves through analogous channels. The cyst ordinarily does not lessen in size; suppuration goes on with hectic fever and exhaustion, which finally carry off the patient.

Diagnosis.—Quiescent or slow-growing pelvic tumors, semi-solid to the feel, and first discovered at the age of puberty, are usually dermoid cysts. Their small size is also an aid to diagnosis, for they very rarely reach the bulk of the adult head. On several occasions, I have found them in Douglas's pouch, fig-shaped and flattened in their antero-posterior diameter. From its attachments to neighboring structures, a dermoid cyst is very liable to be mistaken for the cyst of an extra-uterine foetation. But the exclusion of the history of pregnancy and the slow growth of a dermoid cyst, unless suppuration has taken place, ought to distinguish the one from the other.

Treatment.—While quiescent, the cyst should not be touched, as it is very vulnerable and liable to resent the slightest injury, even from the slender trocar of the aspirator. If suppuration takes place, and the tumor points to the surface, it should be treated, like any other abscess, by a free incision, by the evacuation of its contents, by the introduction of a drainage-tube, and by the injection of antiseptic solutions. Small cysts lying in Douglas's pouch can sometimes be cured by aspiration; at least I have twice succeeded in obliterating them in this way. The operation was, however, followed by suppuration of the cyst, the abscess bursting into the vagina. If, after an exploratory incision, an abdominal cyst turns out to be dermoid, it should be extirpated. But, if extensive adhesions preclude such an operation, the cyst should be opened, evacuated, and thoroughly cleansed. The edges of the opening should then be stitched to those of the abdominal wound and a drainage-tube put in. The after-treatment of such a case will be analogous to that of an ovarian cyst under like conditions, to which the reader is referred.

LESSON XXXI.

CYSTIC TUMORS OF THE OVARY.

CYSTIC degeneration represents by far the most frequent disease of ovarian tumors, and as such it demands our best attention. It consists, in probably the majority of cases, in a dropsical enlargement of one ovisac or of more—viz. in a follicular dropsy.* Indeed, as Cazeaux has aptly said, the ovisacs, or Graafian follicles, are ovarian cysts in miniature. These cysts are divided into three classes, which depend wholly upon the number of ovisacs involved. Thus, a single, or barren, cyst, containing merely fluid, is called a monocyst, or unilocular cyst. Such a cyst would be due to the dropsical enlargement of but one ovisac. It is extremely rare—so much so that its existence is denied. The probability is, that a one-chambered sac does not begin as such, but it becomes so through the breaking of the walls of other contained cysts. A multiple cyst is caused by the simultaneous growth of two or more ovisacs, one of which usually takes the lead in growth and keeps the others dwarfed. This form of cyst is by far the most common. It grows with great rapidity, and may reach a weight of over one hundred pounds. I have successfully removed one weighing one hundred and twelve pounds. A proliferous cyst is a mother-cyst packed with innumerable child-cysts of varying size. These endogenous cysts multiply by exogenous and endogenous growth. The proliferous cyst rarely attains to the size of the multiple cyst, but surgically it is a solid tumor, because it cannot be emptied by tapping, and therefore often needs a long incision for its removal. It also usually possesses a very thin wall,

* Wilson Fox, *Transactions Royal Medico-Chirurgical Society*, June, 1864.
Harris and Doran, *Journal of Anatomy and Physiology*, July, 1881.

which is liable to be torn during the needful manipulation for its removal. Racemose cysts are occasionally met with. They consist of a number of isolated cysts of varying size attached to one common stalk like a bunch of grapes. I have met with two such examples. Tait thinks that they are "produced by the retention of the ova in the Graafian follicles, and the distension of their cavities by a continuous secretion of the liquor folliculi."

The pedicle, or stalk, by which an ovarian cyst is attached to the womb consists of the corresponding broad ligament, oviduct, ovarian ligament, and vessels. The pedicle is sometimes long and slender, at other times short and broad. There is one form of ovarian cyst which has no proper pedicle. It grows between the two layers of the broad ligament, and tends to develop downward into Douglas's pouch. It is called the intra-ligamentous cyst, and needs careful and tedious enucleation for its removal. Sometimes, indeed, extirpation is out of the question, and the cyst has to be treated by the drainage-tube, as will hereafter be shown.

The contents of ovarian cysts vary very greatly in color and in consistency. In monocysts, the fluid is often limpid and colorless. In multiple cysts, the contents are usually syrupy, thick, and turbid. Sometimes the color is quite dark, as much so as weak coffee. The surface of the fluid, after standing, will be covered with a pellicle of cholesterin crystals, which sparkle in the sunlight. In proliferous cysts, the contents are usually viscid, sometimes as much so as jelly, and to this the term colloid is applied. Foulis, who is an authority on this subject, states that he has "never found that an ovarian fluid, however long kept, ever deposited a precipitate spontaneously. Whereas, very frequently in the case of an ascitic fluid, such a spontaneous precipitate appeared within a period varying from a few hours to a few days."* Again he observes: "After ten years of observation made on fluids withdrawn by the aspirator, I found that ovarian fluids never throw down a precipitate of a fibrinous

* *Edinburgh Medical Journal*, July, 1885, p. 76.

character. An ovarian fluid was always a pure cellular secretion. An ascitic fluid was always the result of obstruction to the circulation or of inflammatory action in the peritoneum, and ascitic fluids, allowed to stand for a short time, nearly always showed a precipitate with the character of felted material, under the microscope. If they tapped the patient and subjected the fluid to this test, two or three days would suffice to tell in cases in which there was doubt. The deposit in ovarian fluids showed cellular, not fibrinous, elements under the microscope."*

Chemically, the contents are mucous and albuminous, the albumen being readily detected by the tests of heat and nitric acid. Microscopically, ovarian fluid is found to contain fat-globules, epithelial, granular, and pus-cells, crystals of cholesterin, blood-corpuscles, and compound granular cells, also called the inflammatory globules of Gluge.

Whether ovarian fluid contains a cell or corpuscle peculiar to itself, is yet a moot question. Drysdale contends that it has a characteristic cell. He describes it as "as albuminoid body containing little fatty particles which give it a granular appearance. It resembles in some particulars many other granular cells, but can be distinguished from all other cells found in the abdominal cavity . . . The principal test I employ is acetic acid. If the cell is ovarian, the acid changes it but little, perhaps rendering it only a little more transparent. But if it be a white blood-cell, a lymph-corpuscle, or any of those granular cells which resemble them, it will nearly always take on a different appearance, the cells almost vanishing perhaps, and multiple (2-5) nuclei appearing, as in the pus-cell. Then, if the cell be suspected to be fatty, degenerated, or Gluge's cell, ether may be added, by which the fatty materials will be dissolved and disappear. If no fatty degeneration be present, it is sufficient to add acetic acid."† Garrigues, on the other hand, contends that the ovarian fluid does not contain a characteristic cell.‡

* *Ibid.*, June, 1885, p. 1131.

† *Trans. Amer. Gynæcol. Soc.*, vol. i., p. 195.

‡ *Ibid.*, vol. vi., p. 54.

If I am not mistaken, the opinion of the best microscopists of Philadelphia is, that the Drysdale cell, while not characteristic of ovarian fluids, is not found in any other fluid in such large numbers, and to that extent it is of diagnostic value.

Causation.—In probably the very great majority of cases an ovarian cyst is a dropsy of several ovisacs, but the cause of such growths has never yet been ascertained. Fenwick contends “that the great predisposing cause of ovarian disease is a family tendency to phthisis and that gestation may be the exciting cause.”* To me, in the majority of cases, it seems to depend upon some sexual disturbance.

Very recently, the relation of the sexual condition to disease has been made the subject of scientific inquiry. From a careful examination of the registrar's tables for France, M. Bertillon shows that marriage, by giving comparative immunity from diseases of the sexual organs, prolongs life in both sexes. This statement is confirmed by the statistics of ovarian tumor. Of Lee's 136 cases, 88 were married, 37 were unmarried, and 11 were widows. Of Sir Spencer Wells's first 500 cases, 260 were married, 221 were unmarried, and 19 were widows. Out of 204 completed cases of ovariotomy performed by myself, 121 were married, 61 were single, 22 were widows. Of the married, 29 were sterile, 13 had one child, and 33 had but two children, and several confessed to using preventive measures. Out of a total of 840 cases of ovarian tumor, there are, then, 371 without husbands to 469 with husbands. Now, when one considers, how small the proportion of single women and of widows, is to married women whose husbands are living, the significance of these figures goes to show that child-bearing women, and especially the prolific ones, are less liable to cystic degeneration of the ovaries, and that, unless the cycle of reproduction is completed in a woman, she is plainly violating some law of her being.

Symptoms.—There are no symptoms pathognomonic of this affection, for they are mainly those of pressure, and therefore

* *Lancet*, October 23, 1886, p. 769.

belong in common to all fluid collections in the abdominal cavity. But, in proportion as the abdomen swells, there is a marked emaciation of the extremities. The limbs waste away, the face becomes pinched, the eyes are hollow and staring, deep wrinkles and furrows appear on the forehead and around the mouth, and the nostrils are wide open. This facial expression is termed the *facies ovariana*. Sometimes, when both ovaries are simultaneously affected, hair will grow on the chin and on the upper lip.

The Natural History.—The natural course of an ovarian cyst is to grow rapidly, and, in about two years from the time of its discovery, to destroy life by exhaustion, through the embarrassing pressure which it makes upon the organs of respiration, of circulation, and of nutrition. Malignant cysts grow more rapidly than the benign, while the latter will, on the other hand, occasionally remain for years in a state of quiescence. I have kept stationary cysts under observation for ten years, and others have been reported which lasted twenty years without change.

As a cyst develops, it is very likely to contract adhesions to the organs with which it lies in contact. The most common adhesion is that to the omentum. Next to this is adhesion to the abdominal walls. Then will happen more rarely, adhesions to the bowels, womb, bladder, pelvis, liver, and stomach. A loop of intestine will sometimes be found fastened to the front wall of the cyst, but usually the bowels lie packed behind the tumor.

Rupture of the cyst sometimes takes place, either spontaneously, through over-distention, or through violence, as a kick, a rude fall, or from being run over by a carriage. This accident, if the fluid happens to be bland, may be followed by a cure; but more often a violent peritonitis sets in, which carries the patient off in a few hours. From a study of 257 cases, Aronson * rates the fatality at 41 per cent.; but, without question, the very great majority of cases of bursting cysts of the abdomen, in which this accident was followed by a

* *American Journal of Obstetrics*, Nov., 1883, p. 1210.

cure, were cysts of the parovarium, which, being thin-walled, are likely to burst, and which contain a bland, unirritating fluid. Bursting of the sac can be recognized by more or by less collapse and pain, by the disappearance of the cyst, and by the lessened size of the abdomen. If the patient does not at once succumb, excessive diuresis usually occurs.

It happens occasionally that the inner cyst-wall inflames, either spontaneously or in consequence of being tapped carelessly or from other injury. Suppuration then takes place, the contained fluid becomes fetid, and offensive gases are generated, which give a tympanitic sound on percussion. There will be creeping chills, a red tongue, night-sweats, a frequent pulse, a general rise in the temperature with evening exacerbations: in one word, all the well-known symptoms of blood-poisoning will be present in a greater or less degree. Unless the cyst be at once removed the woman will speedily die.

Ulceration of the cyst, with perforation of its wall, may also occur. The decomposing contents will then be discharged, either into the peritoneal cavity, or into any viscus to which the cyst may have contracted adhesions. In this way, the purulent contents of an ovarian cyst have been discharged through the bowels, the bladder, the vagina, and even into the womb through the oviducts.

Hemorrhage within the sac is an occasional accident. When it takes place, the tumor rapidly enlarges, great abdominal pain is caused by this sudden stretching, the complexion grows pale, the features become pinched; there will be collapse and all the symptoms of internal hemorrhage. If the bleeding does not stop, the patient will die in a few hours. On the other hand, if she survives the immediate danger, she is liable to succumb later to septicæmia, which arises from the decomposition of the now bloody fluid. The immediate removal of the cyst gives the woman, then, her sole chance of life.

Twisting of the pedicle of an ovarian tumor, by axial rotation, is another serious complication, which leads to its strangulation and gangrene, with consequent fatal peritonitis.

The chief factors of this accident are, probably, the filling and emptying of the bladder and rectum, which may rotate an unadherent cyst with a long stalk. The symptoms of axial rotation, as carefully noted by Tait* and Aronson,† are sudden accession of severe abdominal pain and tenderness, a rapid increase in size, and incessant vomiting,—the matter thrown up soon becoming green. The pulse rises, but the temperature is not always affected, and rigors are absent. Such a train of symptoms should lead at once to the abdominal section.

Diagnosis.—The diagnosis of ovarian cysts is often beset with so many difficulties, that very humiliating blunders have been made by the best surgeons of the day. Lizars, of Edinburgh, performed laparotomy on a woman, in order to remove a suspected ovarian cyst, and found nothing but fat. Others have done the same thing, and to their dismay have discovered merely an accumulation of wind in the intestines. The great Diffenbach once opened the belly of a woman, for supposed extra-uterine pregnancy, and found neither fat nor wind—not even, indeed, a trace of a tumor. Once an enormously distended bag of waters broke, just as a deservedly eminent British surgeon had rolled up his sleeves, and was about to wheel his patient into an amphitheatre, crowded with spectators to witness an ovariectomy. A surgeon of whom Great Britain can well be proud, once drove his trocar into the shoulder of a foetus, under the idea that he was tapping one of these cysts. These facts show the importance of knowing how to make an examination for a suspected ovarian cyst, and how to distinguish such a cyst from other tumors and other fluid collections in the abdominal cavity.

The usual history of an ovarian cyst is—a tumor first discovered in one groin, rapidly enlarging, without tenderness or soreness, giving no inconvenience save from its bulk. The general health remains good until the tumor begins to distend the abdomen; then, emaciation takes place, the

* *London Obstet. Trans.*, vol. xxii., p. 97.

† *American Journal of Obstet.*, Nov., 1883, p. 1211.

strength becomes impaired, and the features begin to assume that pinched expression described on a preceding page as the *facies ovariana*. By inspection and palpation, there will be found an elastic, but somewhat irregular tumor, yielding the sense of fluctuation. By percussion, a dull sound will be elicited at every point, except in the flanks, which are more or less resonant. If the contents of the tumor are colloid, or the tumor is thick-walled or very tense, the sense of fluctuation may be either obscure or be wanting. Sometimes a feeling like that of fluctuation, is conveyed by a fat-laden wall of the abdomen. To muffle this fat-thrill, the ulnar edge of the hand of an assistant is laid along the linea alba, while the surgeon percusses the abdomen. The pressure thus exerted, acts precisely like the damper-wedge of the piano-tuner, which muffles the sound of one string while its fellow is being tuned. By these means fluctuation can be detected, and the diagnosis of a collection of fluid unhesitatingly made out. Crepitus, or crackling, is often felt and heard directly under the abdominal wall. It is due to the friction of two rough or inflamed surfaces, which are free, but it usually means adhesions elsewhere.

By the amount of solid and fluid portions of a cyst, a correct diagnosis can often be made out, whether it is simple or multiple, compound or proliferous; but, this is a matter of comparatively little practical importance, because, when once a growing tumor has been ascertained to be ovarian, its removal must follow as a matter of course.

There are, however, certain enlargements or tumors of the abdomen, which are very liable to be mistaken for an ovarian cyst, and to these, in the order of their frequency, we shall call attention.

Ascites.—When the fluid is not encysted, but free, as in ascites, it is at liberty to go to the most dependent portions of the body. Hence, changes in the posture of the woman will make corresponding changes in the level of the fluid. These level-changes are made evident by percussion. When the woman lies on her back, the intestines float up to the sur-

face, and the fluid gravitates to the flanks, making them bulge. In other words, percussion in the dorsal position, elicits a clear note in the umbilical region, and a dull note in each flank. In this posture, the front surface of the abdomen is symmetrical and somewhat flattened. But when the woman sits up the belly becomes convex. Further, ascitic fluid is displaceable by pressure on the abdomen. But, even these signs are not always trustworthy, because the intestines, glued down by adhesions, may not float up, and there will be dulness over the front of the abdomen, or a distended colon may make each flank resonant. For instance, I have known a papillary cancer of the omentum, attended with dropsy of the abdominal cavity, to give such signs of ovarian cyst as dulness in front and resonance in the flanks. When the fluid is ascitic, the floating, or false ribs, are not pushed outward; nor are the bowels crowded up under them and in front of the liver, as happens when a large cyst is present. The womb is usually low down and movable; there will also be more or less of bulging in Douglas's pouch.

On the other hand, in an ovarian cyst, the womb is usually not very movable, and it is displaced to one side, generally behind the cyst. While the woman lies on her back, the front surface of the abdomen is convex and unchanged in form. The floating ribs bulge out, making the chest conical. There will also be dulness in the front wall over the tumor, but usually more or less resonance in the flanks and over the region of the stomach: this clearness on percussion has been aptly termed "coronal resonance." These areas of dulness and of resonance remain constant, whatever the posture of the woman. Yet, in suppurating cysts, or after a careless tapping, or in cysts communicating with the intestine, the sac may contain gas, which will give a tympanitic sound over all the elevated portions of the abdominal surface.

It must, however, be borne in mind that ascites may exist concurrently with an ovarian cyst, especially if the tumor be malignant in character. It is sometimes owing either to the bursting of a papillary cyst; or to papillary growths on

the surface of the cyst; or to a papillary protrusion through the hole made by the trocar. This can usually be detected by deep palpation, when the cyst will be reached and recognized by the fingers; or, by pressing lightly and then more firmly during percussion, an upper and a lower stratum of fluctuation will be detected.

Pregnancy.—The question of pregnancy is a very serious one, for it is sometimes a most difficult one to decide, especially when dropsy of the amnion (hydramnios) exists. In making a diagnosis, nothing must be taken for granted, not even the woman's statement. She may be mistaken, or, indeed, she may be wilfully deceiving, in the hope of having a cheap abortion induced by the examination. She may be pregnant and yet menstruate. On the other hand, an ovarian tumor will sometimes arrest menstruation. A healthy, ruddy complexion, coëxistent with abdominal enlargement, should always excite a suspicion of pregnancy. There is sometimes a jaded look in pregnancy—the *facies uterina*—but never the *facies ovariana*.

The various signs of pregnancy should be searched for, especially ballottement and the foetal heart-sounds. The cervical region should be most carefully examined per vaginam. A good broad rule to remember is, that when the womb is gravid the cervix is as soft as one's lips; when it is empty the cervix is as hard as the tip of one's nose. In all doubtful cases, any operation should be postponed until time has revealed the true condition of things. Of course the introduction of the sound would settle the question of pregnancy, but, this procedure is not to be thought of, when any doubt exists, and it is therefore useless as a diagnostic agent. An ovarian tumor may coëxist with pregnancy, and may have to be tapped or be extirpated before the delivery of the woman. The history of the case, the unusual size of the abdomen, the sulcus between the two tumors, will generally reveal the condition.

Fibroid Tumors of the Womb.—These tumors often reach a very large size, and, if of the soft variety, give an obscure

sense of fluctuation, which so closely resembles that of a colloid ovarian cyst or of a tense thick-walled cyst, as to make the differential diagnosis very puzzling. The hard myoma gives no sense of fluctuation, but, on the other hand, if pedunculated it can be very readily taken for a solid ovarian tumor. A fibroid tumor of the womb can very generally be told by the history of menorrhagia, by its slow growth, by the uterine souffles and colics, by the effacement of the cervix, and by the tumor being felt to be continuous with the cervix and inseparable from the womb. Then, again, women burdened with a fibroid tumor, so far from losing flesh, usually become more fat, and their complexion, like that of many pregnant women, is mottled with patches of brown pigment. Further, the uterine cavity is usually much longer than natural, and, when the tumor is moved from side to side, the motion is communicated to the sound passed within the cavity. But every rule has its exceptions, for, when an ovarian cyst has a close attachment to the womb, the latter may become elongated and also follow the movements communicated to the tumor.

The positive diagnosis between an ovarian cyst and a fibro-cystic tumor of the womb is impossible, but fortunately the latter disease is exceedingly rare. The existence of the latter may be inferred, if the woman's face has a jaded appearance and is disfigured by brown patches—the *facies uterina*—if the growth of the tumor has been very slow, and if the womb is implicated with it. After tapping there will be a partial collapse of the tumor, and the fluid withdrawn is usually bloody, and it coagulates on being cooled. After an exploratory incision, the tumor presents to the eye a dark-blue and vascular capsule covered with interlacing fibrous bands.

Renal Cysts.—Cysts of the kidney are very commonly mistaken for ovarian cysts. I have made this mistake, and it was not until after breaking up adhesions and emptying the cyst that I discovered the character of the tumor. It was successfully removed. Renal cysts start from below the floating ribs and extend downward and forward, while an ovarian

cyst begins from below and grows upward. The former, being generally caused by impaction of a calculus in the ureter, are usually associated with urinary disturbances. They also push the intestines before them, which give a resonant sound on percussion, while the contrary holds good with an ovarian cyst. Since the transverse colon lies between the cyst and the liver, the line of resonance caused by it will show that the cyst is not hepatic. The fluid withdrawn from a renal cyst contains urea and the other constituents of urine, but the urinous odor will be either very faint, or, as in my case, wholly absent. It may as well be stated here, that when renal cysts present great difficulties in the way of their removal, they had better be treated by a large drainage-tube.

A floating kidney may be mistaken for a small ovarian tumor. But the latter has a pelvic attachment and can readily be pushed down into the basin, while the former is kept from being pushed very low downward by an upper attachment. Again, the floating kidney usually keeps its peculiar shape, and it is frequently lost, by slipping from under the fingers into its natural bed in the flank.

Spina Bifida.—Strange as it may seem, this spinal cyst, when internal on account of a deficiency in the anterior parietes of the lower vertebræ, has been mistaken for an ovarian or a parovarian cyst. Two such errors of diagnosis were made by two distinguished gynecologists.* In each, the sac was emptied by the aspirator, and the patient perished shortly afterward with the same kind of cerebral symptoms, as that which follows the sudden withdrawal of the fluid from the cavity of an external spina bifida.

Phantom Tumors.—In the diagnosis of an ovarian cyst, one must be on guard not to mistake for it a phantom tumor. In this imaginary kind of tumor, which hysterical women have the knack of creating, the whole belly will be uniformly distended to the size of a gravid womb at term. This is caused partly by flatus and fat, and partly by the arching forward of the spinal column, with the recti muscles drawn so tense

* *Gaillard's Medical Journal*, March, 1885.

that they cannot be indented. I have frequently had patients, with this kind of abdominal enlargement, sent to me from a distance, under the impression that it was due to some kind of tumor. But the diagnosis is easily made from the uniform resonance all over the belly; if, moreover, the patient's attention be engaged by conversation, the rigidity of the recti muscles disappears, the abdomen becomes flaccid, and the hand can be made to sink in so as to feel the spine. In very nervous women it may be needful to administer an anæsthetic, when all the tokens of a tumor will promptly disappear.

Obesity.—A large accumulation of fat in the abdominal wall and in the omentum, has frequently given rise to the suspicion of the existence of an ovarian cyst. This condition occurs, usually, at the climacteric, and on percussion the vibratile thrill of the fat-laden wall of the abdomen conveys a very misleading impression of fluctuation. Further, to add to the difficulty, if the layer of fat be a very thick one, the abdomen, instead of being resonant on percussion, yields a dull note. But, in obesity, the fat is not limited to the abdomen, for the breasts, face, and limbs partake of the general enlargement. The abdominal wall hangs in folds when the sitting posture is assumed, and the umbilicus is indented and not protuberant. My own method of making the diagnosis, is to grasp the abdominal wall with both hands and ascertain the amount of fat. When this amount is excluded, there will not be found room enough behind it for a tumor of any size, and the enlargement will thus be satisfactorily accounted for.

A dilated stomach, cystic tumors of the omentum, and encysted abscesses of the peritoneal cavity, and, indeed, of the abdominal wall, have been mistaken for ovarian tumors; but these are very exceptional cases. In all doubtful cases an exploratory incision should be resorted to.

SURGICAL TREATMENT OF OVARIAN CYSTS.

In the consideration of this subject it may be divided into the palliative treatment and the radical treatment.

Palliative Treatment.—Tapping, either by the trocar or by the aspirator, comprises the only palliative treatment of ovarian cysts; yet, as a broad rule with but few exceptions, an ovarian cyst should not be tapped. The objections to this operation are—that, slight as it may seem, it is by no means devoid of danger. Even when the smallest hollow needle of the aspirator has been used, inflammation of the cyst may follow, which will compel the immediate resort to ovariectomy, and very greatly compromise the success of this radical operation.* This has repeatedly happened—once in one of my own cases, in which, however, the removal of the cyst saved my patient's life. Further, the fluid of a polycyst is usually acrid—so much so sometimes as to irritate the hands of the operator—and the escape of a few drops into the cavity of the peritoneum may set up a violent and rapidly fatal peritonitis. Then again, a fatal hemorrhage may take place from some wounded vessel, either in the cyst-wall, or in the adherent omentum, or in the vascular pedicle which may lie spread out in front of the cyst-wall, or indeed in the abdominal wall itself, for the vessels here are often varicose from impeded circulation. In the fourth place, adhesions are very likely to form after tapping. Fifthly, innumerable child-cysts, which were very small before the tapping, being now relieved from pressure, are liable to take on rapid growth and make the tumor more solid; and the more solid the cyst, the longer the incision needed for its removal. Sixthly, in polycysts not only are the dangers attending the operation enhanced, but the cysts rapidly refill, and the woman becomes exhausted by the drain on her system. At the very best, 2 per cent. of cases of tapping in polycysts are fatal, even when performed by the most skilled specialists. Seventhly, a cyst once tapped rapidly refills, and soon needs repetitions of the operation. This drain on the system quickly tells upon the woman, and she is sometimes left too weak to have the radical operation performed. The first tapping, indeed, greatly

* *American Journal of Obstetrics*, Nov., 1883, pp. 1169 and 1189; also *Transactions American Gynecological Society*, vol. ii., 1877, p. 270.

hastens on this crisis, and it should therefore be put off as long as possible. Eighthly, a cyst emptied by tapping tends to rotate on its axis, and torsion of the pedicle may result, ending in gangrene and peritonitis. Ninthly, repeated tapplings tend to convert benign papillary growths into malignant. Tenthly, the danger of subsequent infection of the peritoneum, by a papillomatous or a colloid protrusion through the cyst puncture, or by the escape into the abdominal cavity of malignant germs.* Finally, Lawson Tait† draws attention to the fact that “repeated tapplings deprive the blood of some element or elements included in the infinite variety of albuminous substances found in ovarian cysts, the deficiency of which predisposes to coagulation of blood.” Hence after the removal of the cyst, deaths have been “due to the formation of a firm white clot which started from the point of ligature of the pedicle, and slowly traversed the venous system until it reached the heart, death ensuing in from thirty to forty hours after the operation. The symptoms which precede death are swelling of the legs, rapid rise of the pulse, and its disappearance from the extremities some time before death, and breathlessness, ending in suffocation and slight delirium.” He has met with several such cases of venous thrombosis starting from the pedicle, and they all occurred in patients who had been previously tapped.

There are, however, cases in which tapping cannot be dispensed with; for instance—

1. Many women with ovarian tumors, having heard of cases of abdominal effusion or of abdominal cyst in which tapping was followed by a cure, will not submit to the radical operation, until repeated tapplings have proved to them the futility of the trocar.

2. Cysts of the parovarium and of the broad ligament, being often cured by the use of the trocar, it is proper to try the effect of one tapping in slow-growing, unilocular, thinned-walled, and flaccid cysts, which thus exhibit the chief characteristics of these extra-ovarian cysts.

* *Medical News*, January 29, 1887.

† *Midland Medical Society, Lancet*, Feb. 18, 1882.

3. When an ovarian cyst develops during the later months of pregnancy, it will often be best to resort to tapping, in order to relieve the woman from the pressure of two growing organs and enable her to go to full term. Sometimes labor is made impossible by the presence of a cyst, which will then have to be emptied.

4. In very large tumors, which by pressure interfere with the functions of the kidneys, the heart, and the lungs, thereby causing albuminuria, œdema, or dyspnœa, tapping is a useful prelude to ovariectomy. By the relief from pressure afforded to these organs, not only will the liability to shock be lessened, but also to hemorrhage, for vessels previously varicose will now contract to their natural calibre.

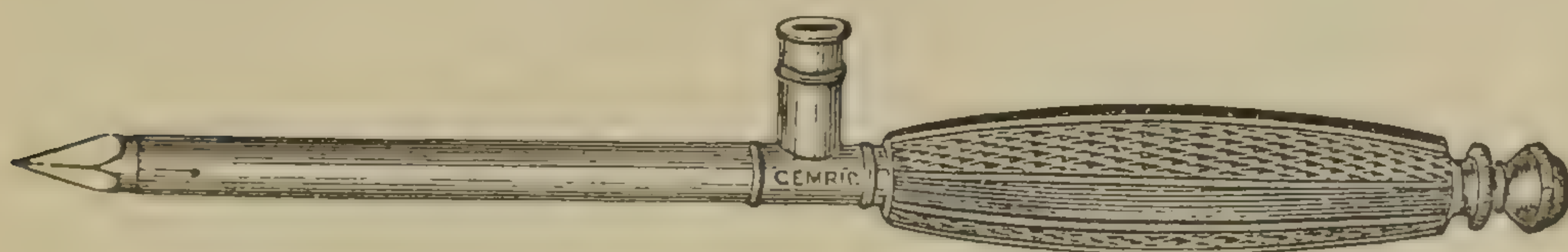
5. In cases of doubtful diagnosis, or in those in which from malignancy, from formidable adhesions, or from other circumstances the radical operation is deemed impracticable, tapping in the first case may clear up the diagnosis, and in the latter ones will prolong the patient's life. But, it must always be borne in mind, that in a few weeks the fluid will reaccumulate, and the operation will have to be repeated, rapidly exhausting the patient by the drain on her system. It is well, therefore, to put off the first tapping as long as possible.

Tapping may be performed through the abdominal wall, through the vagina, or through the rectum, but, for reasons which will presently be given, the first mode is decidedly the best.

Tapping through the Abdominal Wall.—For this operation either the aspirator may be used, or else a trocar. One of the best has an elbow for a rubber tube attachment (Fig. 99). Of the two, I should prefer the former. In aspiration, after the bladder has been emptied, the woman lies on her back close to the side of the bedstead, with her abdomen exposed. The preferable site of puncture is in the linea alba midway between the navel and the symphysis pubis; that is to say, at a point where the tissues, being tendinous, are most free from blood-vessels, and where the omentum is most out of

the way. But, if at this point the tumor feels solid, or an underlying knuckle of intestine is discovered by percussion, or the vessels look varicose, any other place in the abdominal

FIG. 99.



TROCAR WITH ELBOW ATTACHMENT.

wall may be selected where fluctuation is most manifest, provided it lies below the level of the navel. The reason for choosing a low site for the puncture is, that if the hollow needle be plunged in at any point above the navel, it will slip out of the cyst, as the latter collapses, before the fluid is wholly evacuated. The skin is now thoroughly cleansed with soap and water, and washed with a 5 per cent. solution of carbolic acid. The painful part of the operation being the penetration of the skin, the selected place for puncture should either be frozen with the ether spray or be benumbed by a lump of ice dipped into some table-salt. After the aspirator-jar has been exhausted of air, the hollow needle, or canula, armed with its stilette, is lubricated with carbolated oil or vaseline, and rapidly plunged deeply into the cyst. Should the cyst not wholly collapse, the canula has probably become obstructed, and it should be cleared out by one of the blunt stilettes, which are made of different sizes to fit the different canulas. Sometimes the flaccid walls of the sac, as it becomes empty, are sucked up into the end of the canula, and the flow of fluid is suddenly arrested. This accident is recognized by a peculiar valve-like vibration communicated to the instrument, and is overcome by raising up the end of the canula or by directing it to another part of the cyst. Should, on the other hand, other cysts present themselves, they can be emptied without withdrawing the canula, by reintroducing the stilette, and by directing its point to each cyst in succession. When the fluid ceases to flow, the forefinger and

thumb firmly compress the fold of the abdominal wall behind the canula, as it is withdrawn; so as to avoid the entrance of air, and the small puncture is covered by a piece of adhesive plaster. A pad of cotton wool is now laid over the scaphoid abdomen and a flannel binder applied. These afford a grateful feeling of support, and take away that sense of goneness which is likely to occur. To avoid all risks of inflammation, the patient must keep her bed for three or four days and eat sparingly.

When a large trocar is used, the operation should be performed with every antiseptic precaution. The skin should be previously incised with a lancet, and, lest air should be sucked up into the sac, the free end of the rubber tubing should touch the bottom of the bucket, so as to be always immersed in the escaping fluid. This rubber tubing acts as a siphon with great suction power, and the cyst is more rapidly emptied by a trocar than by the aspirator. Yet, I cannot help believing, that the latter by its small size is by far the safer instrument, and I always use it when a simple tapping is aimed at. Should any stubborn bleeding follow the removal of the canula, a hare-lip pin may be passed across the wound, deeply enough to get below the wounded vessel, and compression made by a turn or two of silk ligature around the pin. The same means are to be adopted to stop the oozing of fluid, which sometimes takes place, when a cyst with colloid contents cannot be wholly emptied by the trocar. For it is highly prudent under such circumstances to stop the oozing, as some of the fluid is sure to get into the cavity of the peritoneum, with very generally fatal effects. In such a case the pin ought to include the lips of the wound in the cyst. To avoid, as much as possible, the escape of irritating ovarian fluid into the cavity of the abdomen, the cyst when tapped should always, if possible, be wholly emptied. This is a rule without an exception. It is, therefore, very bad practice to remove, even with the hypodermic syringe, a few drops of the fluid for microscopic examination. Several cases of death from this cause have been

reported.* I lay stress on this point because in the former editions of my *Lessons in Gynæcology* I advocated this reprehensible practice.

Tapping Through the Vagina.—This operation is sometimes a very tempting one to perform, when one of the cysts of a polycyst is pressing downward behind the bladder and causing dysuria. But it is by no means so safe as the suprapubic mode of tapping. The reasons for this are—(a) The vessels are larger and lie closer together in the lower wall of the cyst near the stalk; (b) in a polycyst, the larger cysts, growing where they have most room, usually develop in the abdominal cavity, while the more solid portion remains below in the pelvic region; (c) other organs, such as the bladder, womb, and rectum, are liable to become dislocated and lie in the track of the trocar; (d) the roof of the vagina responds to every respiratory movement of the diaphragm, and a cyst low down is not, from pelvic adhesions, so likely to collapse when tapped, as one higher up; hence the cyst is liable to act as a pair of bellows, sucking in air and forcing it out. This inevitably causes suppurative inflammation, with all its attendant evils. For these reasons, this mode of tapping is never resorted to, except in cases of pelvic adhesion, or in those in which the cyst starts from the lower side of the broad ligament and grows downward. Even then, it is done only to relieve the distress caused by the double pressure upon bladder and rectum. In such cases the aspirator should be used, as it lessens all the risks. Should suppurative inflammation set in, the sac must be again emptied, the wound kept open by a drainage-tube, and the cavity thoroughly cleansed by daily injections of antiseptic fluids.

Tapping through the rectum has long ago been abandoned by the profession, as it ought to be, except in some very rare cases of atresia vaginæ. It was at one time supposed to possess advantages over the vaginal method, because the subsequent offensive discharges could be retained at will like the other contents of the bowel. But the cavity of the sac always

* *American Journal of Obstetrics*, April, 1876, p. 146.

became distended with fecal gas, and fatal septicæmia was pretty sure to set in.

Radical Treatment.—Tapping, followed by the injection of iodine into these cysts, has sometimes been rewarded with a cure, and at one time this mode of treatment had very warm advocates. After the cyst is wholly emptied by aspiration, the action of the instrument is reversed, and from two to ten ounces of the officinal tincture of iodine are thrown in. The tincture is used of full strength, because the residual fluid in the cyst will be enough to dilute it. The cyst-wall is next kneaded, and the patient made to turn from side to side and from back to chest, so that the tincture may come in contact with every portion of the secreting surface of the cyst. The fluid is then pumped out, but all cannot be brought away; enough usually remains behind to produce some slight constitutional disturbance. While the canula is being withdrawn, in order to prevent the escape of any of the irritating injection into the abdominal cavity, the thumb and forefinger are made to grasp the fold of abdominal wall at the puncture-site, and to press it firmly down on to the collapsed cyst-wall. Good and lasting cures have followed such a treatment; but, since they can happen only in monocysts, which are almost always parovarian, and not ovarian, it is probable that the mere emptying of the cyst would have done as much. In polycysts, such a treatment is not to be thought of, for it would be attended with far more hazard than even the operation of ovariectomy. At the present day, injections of iodine are practiced only by physicians who do not operate; ovariectomists never resort to them.

Tapping, followed by enlarging the wound in the cyst, stitching its edges to those of the abdominal wound, and permanently keeping it open by tents or by a large drainage-tube, has frequently been attended with success. But, since extensive and prolonged suppuration must inevitably ensue, this operation has proved to be a far more dangerous one than that of ovariectomy. It should, therefore, not be resorted to, excepting in cases of cysts which are too adherent to be re-

moved. The after-treatment consists in treating the case precisely as if it were an abscess. The cyst is kept empty by draining, and sweet by such deodorizing agents as solutions of iodine, carbolic acid, potassium permanganate, and the liquor sodæ chloratæ. I had one such case, a patient of Dr. C. A. Currie, in which the cyst was wholly adherent to all the pelvic organs and structures, and had, besides, a communication with the bladder. Not daring, under such circumstances, to remove it, I treated it successfully by incision, drainage, and disinfecting injections; but it was a long time before the drainage-tube could be removed and the woman be released from her bed. Cases, indeed, have occurred, in which six months elapsed before the drainage-tube could be taken out and the woman pronounced well.

Another exception in favor of this operation may be made, in the case of small cysts growing downward and bulging out the hind wall of the vagina. It may then be advisable to follow Noeggerath's plan. He snips open the vagina transversely behind the cervix to the length of one inch, and makes a corresponding incision in the cyst-wall. The edges of the two incisions are then stitched together and a drainage-tube put in. Thus, the cyst is left with a free and permanent opening into the vagina, through which such antiseptic solutions as have been noted above are thrown up. In time the collapsed cyst-walls adhere to one another and cease to secrete.

Electrolysis has of late also been lauded as a sure and harmless remedy for these cysts. But a careful examination of the subject made by Mundé shows that this agent has been greatly overrated as a specific, and that it "can in no wise supplant ovariectomy."*

Rupture of ovarian cysts has occasionally taken place, either through over-distension, or through such violence as a rude fall or an upset from a carriage. This accident, if the tumor were a monocyst, or if the fluid happened to be bland, sometimes ended in a lasting cure. The hint was not thrown

* *Transactions American Gynæcological Society* vol. ii, p. 435.

away, and several surgeons cut circular openings into the cyst, in order to establish a permanent communication with it and the abdominal cavity. But this practice was soon given up, because it was found, that the intrusion of ovarian fluid into the serous cavity usually set up a violent and rapidly fatal peritonitis. For such an accident, when followed by inflammation, there is but one remedy—the immediate removal of the cyst by ovariectomy. Desperate as this remedy seems, it has repeatedly been followed by success. The only cyst in which it might be held warrantable to establish a communication with the abdominal cavity, is that of the parovarium recurring after repeated tapplings, and so bound down by adhesions or so covered by the broad ligament as to be irremovable. The fluid it contains is so limpid and bland as not ordinarily to inflame the peritoneum.

LESSON XXXII.

OVARIOTOMY.

THE term ovariectomy comes from *ὠάριον*, ovary, and *τομή*, an incision. It is a barbarous compound of Latin and Greek, which is forced into meaning, the operation for the extirpation of an ovary on account of some disease of its own structures that causes it to increase in bulk. A fibroid or a sarcomatous degeneration of this organ, as has been shown, will sometimes happen, but cystic degeneration is by far the most common form of disease to which the ovary is liable. When both ovaries are enlarged and removed, the operation is called double ovariectomy. The terms ovariectomy and *öophorectomy* (*ὠόφορον* and *ἐκτέμνω*, to cut out the ovary) really mean the same thing, the latter word, indeed, being the more appropriate. But, by modern usage, the former is limited to the operation for the removal of an ovary greatly enlarged by some intrinsic disorder. By *öophorectomy* is now meant, the operation for the removal of diseased ovaries which are not very large, or of both ovaries for the purpose of bringing on the menopause, and thus curing diseases kept up or caused by the functional existence of those organs, while the ovaries themselves may or may not be diseased.

Before the eighteenth century, the operation of ovariectomy as a radical cure had been suggested by a number of physicians, but had never been put into practice. Later, John Hunter and John Bell both advocated the operation, but neither ventured to perform it. This honor was reserved for Ephraim McDowell, a Virginian practising in Kentucky, who had attended Bell's course of lectures delivered in Edinburgh in 1794, and had imbibed the opinions of his teacher. He returned to Kentucky in 1795, and began at once to prac-

tise his profession, but it was not until 1809 that he first met with the opportunity for performing ovariectomy. The operation was successful, his patient having lived thirty-two years longer, and having died at the end of her seventy-eighth year. Before his own death, which occurred June 25, 1830, in the fifty-ninth year of his age, McDowell had performed 13 ovariectomies, with 8 recoveries.

In spite of McDowell's success, and in spite of a large and growing percentage of recoveries reported by Atlee, Clay, and Spencer Wells, this operation was condemned so violently by the profession that its advocates were fairly ostracised, and twenty years have hardly elapsed, since it has been put upon as firm a basis as any other capital operation in surgery. "In 1843, Diffenbach, the boldest of all surgeons then living, wrote that ovariectomy was murder, and that every one who performed it should be put into the dock. Now," writes Nussbaum, "we save lives with it by the hundred, and the omission of its performance, in a proper case, would in these days be looked upon as culpable negligence."

The most common causes of death after ovariectomy are septicæmia or septic peritonitis, traumatic or frank peritonitis, shock, exhaustion, and hemorrhage; and it is against these foes that the operator must from the first aim all his efforts. In no other operation does the issue depend so largely on the experience of the surgeon. Every ovariectomist finds that his success grows with the number of his cases. Of 1000 successive ovariectomies, Wells lost 34 out of the first group of 100 cases, and but 10.9 per cent. out of the last group of 100.* Out of his first fifty ovariectomies, Lawson Tait had 19 deaths.† Two years ago he had a run of 146 cases without Listerism and without a death.‡ Keith, who began with a mortality of about 20 per cent., had a series of 100 cases with 97 recoveries. 70 of these were successive.

* *Wells's Abdominal Tumors*, Ed. 1885, p. 64.

† *Medical Record*, Jan. 3, 1885, p. 2, and *British Medical Journal*, April 15, 1882, p. 544.

‡ *British Medical Journal*, May 15, 1886, and *Journal of American Medical Association*, Feb. 12, 1887, p. 172.

Schröder had 17 deaths in his first hundred, 18 deaths in his second hundred, and 7 deaths in his fifth hundred.* Winckel lost 65 per cent. out of his first cases, and only 12 per cent. out of his last one hundred cases.† Martin lost 15 out of his first 52 cases, and but 3 out of his last one hundred.‡ Knowsley Thornton, out of his first 328 cases, lost 10.67 per cent.§ In his last 300 cases the mortality was only 7 per cent.|| Of my own first cases I lost about one in every three. Lately I had 31 cases with but 1 death. In the last two years I have had 57 cases with 5 deaths, or a percentage of 8.7 per cent.¶ The great majority of these cases were operated on in my private hospital, where every detail of antiseptic surgery can be accurately carried out, and where the patients are directly under my care.

The statistics of general hospitals are by no means so good, private or special hospitals showing to much greater advantage, even when compared with the patients own homes. In the Vienna General Hospital during the year 1881, ‘ovariotomy was performed 64 times with 38 complete recoveries, 25 deaths, and 1 woman was discharged with marasmus.’** The statistics of two hospitals—viz., Birmingham General Hospital, and Birmingham Hospital for women—show as follows during a period from January, 1878, to September, 1885:

Birmingham General Hospital—Ovariectomy, 35 cases, 11 deaths; mortality 31.4 per cent. Birmingham Hospital for Women—Ovariectomy, 268 cases, 19 deaths; mortality 7.1 per cent. Of total laparotomies, the former had 85 cases, with 21 deaths; or a mortality of 24.7 per cent.; the latter had 632 cases with 49 deaths; or a mortality of 7.7 per cent.††

* *Wells's Abdominal Tumors*, p. 65.

† *Winckel's Diseases of Women*, p. 571.

‡ *Frauen-Krankheiten*, 1885, p. 483.

§ *Medical News*, Jan. 27, 1883, p. 117.

|| *Personal Communication*.

¶ *Medical News*, Jan. 30, 1886, and Jan. 29, 1887.

** *Medical News*, Dec. 30, 1882, p. 745.

†† Price, *Journal of American Medical Association*, Feb. 5, 1887, p. 158.

Nor are the statistics of the general practitioner much better. Taking the profession at large, out of 5153 cases of ovariectomy collected by Baum, there was a mortality of 29.13 per cent.* Out of 2023 cases collected by Younkin, the mortality was 27 per cent.† By operative skill, by cleanliness, by wise hygienic measures, and probably by the use of antiseptic precautions, the fatality has been reduced by skilled specialists to an average lower than that of any other equally severe surgical operation; which considering the size of the wound, the importance of the parts involved, and the delicacy of the exposed structures, is very remarkable.

This brings up the question of simple or of aseptic ovariotomy—a very important question and one not yet fully settled. The objections to Listerism are—that it is very troublesome; that it is liable to poison the patient fatally, as well as to injure the health of the operator; that it is useless, indeed merely a surgical craze; and that it is not the carbolic acid which does good, but the cleanliness enforced by this system. But, there is no doubt that, since the introduction of antiseptic surgery, the mortality has been much lessened in every land. For instance, “in Germany, where the success of ovariotomy has not been so good as in other countries, the mortality by means of the antiseptic treatment has been reduced from 90 to 20 per cent.”‡ From an analysis of all the cases of ovariotomies performed by American surgeons, “the percentage of recoveries is overwhelmingly in favor of Listerism.”§ On the other hand, Thomas Keith, of Edinburgh, and Tait of Birmingham, thus far the most successful of ovariotomists, have wholly abandoned Listerism. The former, indeed, claims now “to get as good results without it, and better results than any one has yet got with it.”||

But statistics depend so much upon accidents and contin-

* *Agnew's Surgery*, vol. ii., p. 811.

† *New York Medical Record*, Nov. 11, 1882, p. 560.

‡ *Agnew's Surgery*, vol. ii., p. 800.

§ H. C. Bigelow, *American Journal of Obstetrics*, July, 1882, p. 651.

|| *British Medical Journal*, May, 27, p. 796.

gencies, as well as upon personal equations, that they are always untrustworthy. For instance: during the year 1881, in the Samaritan Hospital of London, Thornton and Meredith used the carbolated spray of 1 in 40, and followed out every detail of antiseptic surgery. They had a mortality of 7 per cent. Bantock in the same institution, after gradually lessening the strength of the spray until water was alone used, finally gave even it up altogether. He, however, for purposes of cleanliness, always covered the instruments in the tray with water. The mortality of his operations showed the high rate of 20 per cent. The house committee, a body of laymen, thereupon "expressed a strong opinion against the performance of ovariectomy for the future without full antiseptic precautions."* In 1885, the two former gentlemen had sixty-seven abdominal sections of all sorts with four deaths—a mortality of 6 per cent; while Bantock had forty-three abdominal sections with four deaths—a mortality of 9 per cent.† In 1886, however, the tables were wholly turned; for Bantock had twenty-five cases of ovariectomy without a death; while Thornton had thirty-two cases with six deaths—a mortality of 18.7 per cent.‡

My own practice is to adhere to every detail of antiseptic surgery but the spray, which I have abandoned in my private infirmary, and use only in the wards of the general hospital to which I am attached. I fully agree with Bigelow that "it would be a grave error to abandon a practice, which has achieved brilliant results, until something shall be brought forth which shall be as thoroughly protective, and in the use of which there may be no possible dangers. Time alone can demonstrate satisfactorily the relative values of Listerism, and of perfect cleanliness without Listerism. The results of a large number of cases, in which cleanliness and attention to detail have alone been used, are the only criteria upon which we can strike a judicial balance."§

* *British Medical Journal*, May 20, 1882, p. 747.

† W. P. Manton, *Transactions Michigan State Medical Society*, for 1886.

‡ *British Medical Journal*, February 12, 1887, p. 334.

§ *American Journal of Obstetrics*, July, 1882, p. 651.

Contraindications for Ovariectomy.—An operation should be declined in far-advanced tuberculosis, in cancer of the ovary or of any other part of the body, in grave structural lesions of any of the vital organs, in ascites if caused by disease of the heart, of the liver, or of the kidney, in gastric ulcer, or in any serious disease of the alimentary canal. Extensive adhesions should not count as a contraindication, nor should age, since young girls and very old women have been successfully operated on. Albuminuria is often due to the pressure of the tumor on the kidneys, and, unless it existed before the appearance of the tumor, or it is positively known to be caused by Bright's disease, it should not preclude the operation; but chloroform should then be used as the anæsthetic. Extreme debility dependent upon the ovarian disease makes the prognosis grave, but it should not prevent a resort to ovariectomy. I have indeed had several recoveries, when the patient was so reduced in strength, as to make it a very anxious and difficult task to keep her from dying on the table.

Indications for Ovariectomy.—This operation should not, as a rule, be performed when the cyst has first been discovered, but when it is found to be steadily increasing in size. My reason for this conservative advice is, that a certain number of abdominal cysts—especially when of parovarian origin,—stop growing after reaching a moderate size, and give no further trouble. I have had patients under observation for years, who, during that time, have carried such quiescent cysts, and were not conscious of their existence. When, however, a woman broods over her condition, and is anxious to have the tumor removed, the operation should be performed as soon as possible. As a rule, the earlier a growing cyst is removed, the better; because, being smaller and usually without adhesions, it is then more safely removed, and because, although benign in the outset, it tends in time to take on malignant degeneration.

Again, when an ovarian cyst is complicated with pregnancy, it is best to perform the operation in the first half of the period of gestation; for, in the last half, the broad ligaments

receive a large supply of blood, and all the pelvic vessels become varicose. Pregnancy is indeed no bar to the operation, the prognosis being favorable both to the mother and to the child. Schröder and Olshausen performed 21 ovariectomies in pregnant women, with only 2 deaths.*

When septic peritonitis sets in; when the contents of the sac become purulent, as they sometimes do, either spontaneously or after an unprotected tapping; when the cyst bursts and serious symptoms arise; when torsion of the pedicle occurs, or when a free hemorrhage into the sac takes place—the radical operation should unhesitatingly be performed, and that without any delay.

Preparation of the Patient for the Operation.—The operation having been decided upon, every precaution must be taken to ensure a favorable result. The patient should avoid all exposure to contagious or to zymotic diseases, and she should be put in the very best condition of health possible under the circumstances. If the kidneys be inactive and the urine highly concentrated, depositing mixed urates in abundance, it will be well for the patient to make use of warm baths, and to take saline cathartics in quantities sufficient to secure a daily action of the bowels. The alkaline carbonates, largely diluted, will also prove beneficial, and so will also the effervescent citrate of lithia. Sometimes, and especially when anasarca and œdema of the legs occur, it will be advisable to relieve the pressure-congestion of the kidneys by a preliminary tapping. Other organs will also be relieved, and valuable time for the action of medicines is often gained by emptying the cyst. Tonics, iron in the form of Basham's mixture, a generous diet, and fresh air may be needed. A trip to the seashore, or to the country, will often do much good in preparing a broken-down patient for the operation. If the patient comes from a malarial district, from twenty to thirty grains of quinia should be given during the twenty-four hours for two or three days before the operation, and ten grains a few hours before the time of the operation. If this be not

* *British Medical Journal*, Dec. 1880, p. 1027.

done, a severe explosion of malarial fever after the operation may put the patient's life in jeopardy.

An operation of election should not be undertaken during a monthly period. It should be performed either about ten days before one, or about a week after one. The very best time is midway between two fluxes. When, however, through some lesion or some accident, immediate relief is demanded, no regard whatever should be paid to the factor of menstruation. Some surgeons operate, indeed, in any case whether the woman is menstruating or not, and profess to find no difference in the result.* I have done so repeatedly, and with no bad results.†

For several days before the operation, the bowels should be kept open, and the diet should consist largely of milk, eggs, rice, and of wholesome and easily-digested food. On the day preceding that of the operation, the upper portion of the pubic hair should be cut off and the abdomen, if hairy, shaved. In the evening, the patient takes a warm soap-bath, and is washed perfectly clean by her nurse, who must be an experienced woman, able to pass the catheter and to take the temperature. She then puts on clean clothing and goes to bed, where she stays until the hour fixed upon for the operation. To ensure sleep, I am in the habit of giving at bed-time thirty grains of potassium bromide, combined sometimes with opium. Early next morning, a dose of castor oil is administered, and it is much more easily swallowed if disguised in some vehicle and brought to the patient without any previous warning. When oil cannot be taken, I give, at bedtime of the previous evening and in one dose, two compound cathartic and two Lady Webster pills. To avoid ether-vomiting, the breakfast should consist merely of one piece of dry toast and a cup of tea, or of a cup of beef-tea or of a goblet of milk, and afterward she must eat nothing more. To calm the nerves, another thirty-grain dose of potassium bromide may be given, with or without opium as the case may be, and especially if the woman be at all agitated.

*T. Savage, *Brit. Med. Journ.*, April 14, 1883, p. 712.

†*Medical News*, January 29, 1887.

A very good time for operating is from noon to two o'clock in the afternoon, for by that time the oil will have acted and the light breakfast will have been digested. Some surgeons operate as early as nine and ten o'clock in the morning, in which case the cathartic will have to be administered in the morning of the previous day. At the hour fixed upon for the operation the woman puts on a flannel sacque, warm stockings and drawers, and empties her bladder.

The bedstead, on which the woman is to lie after the operation, should have a horse-hair mattress, and should be wide enough to permit her attendants to move her, on a draw-sheet, from one side of it to the other. I formerly placed my patients on narrow single bedsteads, so that they could be reached and be waited upon equally well from either side; but I found that an unchangeable position on the back soon became intolerably irksome. Next, indeed, to the thirst following the operation, my patients complain mostly of the supine posture which they are compelled to assume.

The room, in which the operation is to take place, ought to be a separate one, so that the lady can be etherized in her sleeping-room, and may not be unnerved by witnessing the needful preparations. Several days beforehand, the carpet of the operating-room should be taken up and the curtains taken down. Every useless piece of furniture should be removed, the closets and bureau-drawers emptied, and the whole room thoroughly cleansed and ventilated. Several hours before the time of the operation this room ought to be heated to a temperature of 75° , and the air disinfected and made moist by a solution of carbolic acid kept boiling in a dish on the stove, or over an alcohol lamp. Let me here say that, if possible, this operation should not be performed within the walls of a crowded general hospital nor in unhealthy localities, but, as statistics well show, in private houses or, far preferably, in small special hospitals.

Articles Needed for the Operation.—The following articles should be provided by some member of the patient's family. Following the example of the late Washington L. Atlee, I

have a printed list of them, which is sent to the family physician some days before the operation:

One yard of rubber plaster; two rolls of raw cotton, made aseptic by being baked in the range-oven just before the operation; two yards and a half of fine white flannel, for two binders; six one-grain rectal suppositories of the watery extract of opium; two pounds of the best ether; two gallons of a 5 per cent. solution of the best carbolic acid, made at least two days beforehand; four ounces of Monsel's solution of iron; twelve ounces of undiluted alcohol for the spray-producer; some old whiskey, with cup, spoon, and sugar; a nail-brush, basin, and soap; a pin-cushion, with large pins; two kitchen tables, or two dressing-tables; one small stand for the spray-producer; one small table for the basins and sponges; one chair without a back for a bucket of hot water; two new tin basins and one tin cup; a new bucket and a jug of hot water; two kettles of boiling water, ready on the range; a small tub and an empty bucket; six bottles filled with hot water and tightly corked; an empty wine-bottle for the aspirator; a rubber ice-cap, or two pig's bladders, for holding ice; a rubber-cloth one yard and a quarter square, with an oval hole in the centre six inches wide and eight long; two kitchen aprons for the operator and his assistant; one clean blanket for the patient's lower extremities; two large platters or two meat-dishes, to be used as trays for the instruments;* clean towels, clean sheets, clean blankets, clean comfortables, and clean pillows.

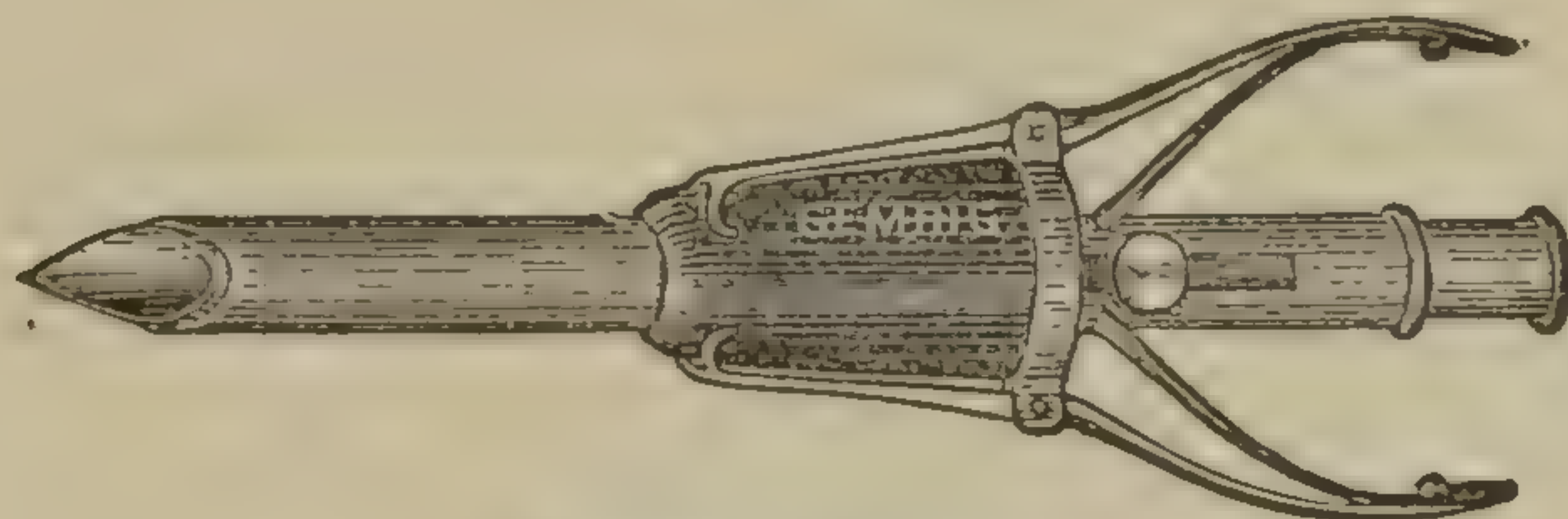
Instruments.—In simple cases very few instruments are needed; but as one never knows beforehand what complications may be met with, it is best to be always prepared for every emergency. One must therefore have on hand, every instrument likely to be wanted in the most formidable operation. The following list comprises all the instruments and

* These platters are usually too shallow to hold a solution of carbolic acid deep enough to cover the bulkier instruments. It would, therefore, be well to have a tin tray made especially for the purpose, measuring nineteen inches long, twelve wide, and three deep; or a nest of smaller trays can be carried in the operator's bag.

other articles, that I carry with me in my operating bag; but it will not suit every surgeon, who will after a few operations choose his own favorite instruments:

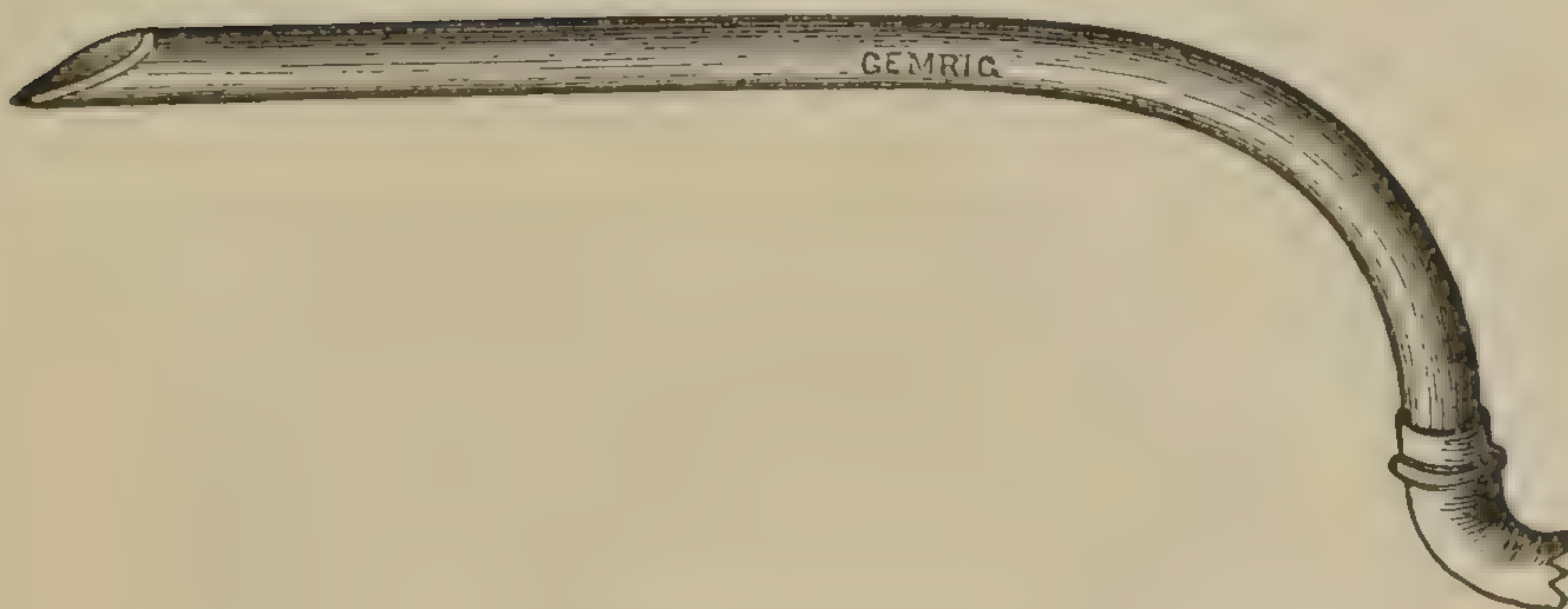
One steam spray-producer, which will work two hours; assorted silk ligatures on spools; Lister's antiseptic gauze or salicylated cotton; two dozen straight surgeon's needles; assorted needles with varying curves; two aneurismal needles for transfixing pedicles; one needle-holder; one hypodermic syringe; two dozen assorted catch-forceps; one uterine tenaculum; assorted hair-lip pins and acupuncture needles; one grooved director; two scalpels; Baker-Brown's cautery clamp; ten fine surgeon's sponges of different sizes; two long and flat sponges; one wire *écraseur*; one wire clamp, or Koeberlé's *serre-nœud*; a Paquelin's cautery or three cautery-irons;

FIG. 100.



WELLS'S TROCAR.

FIG. 101.



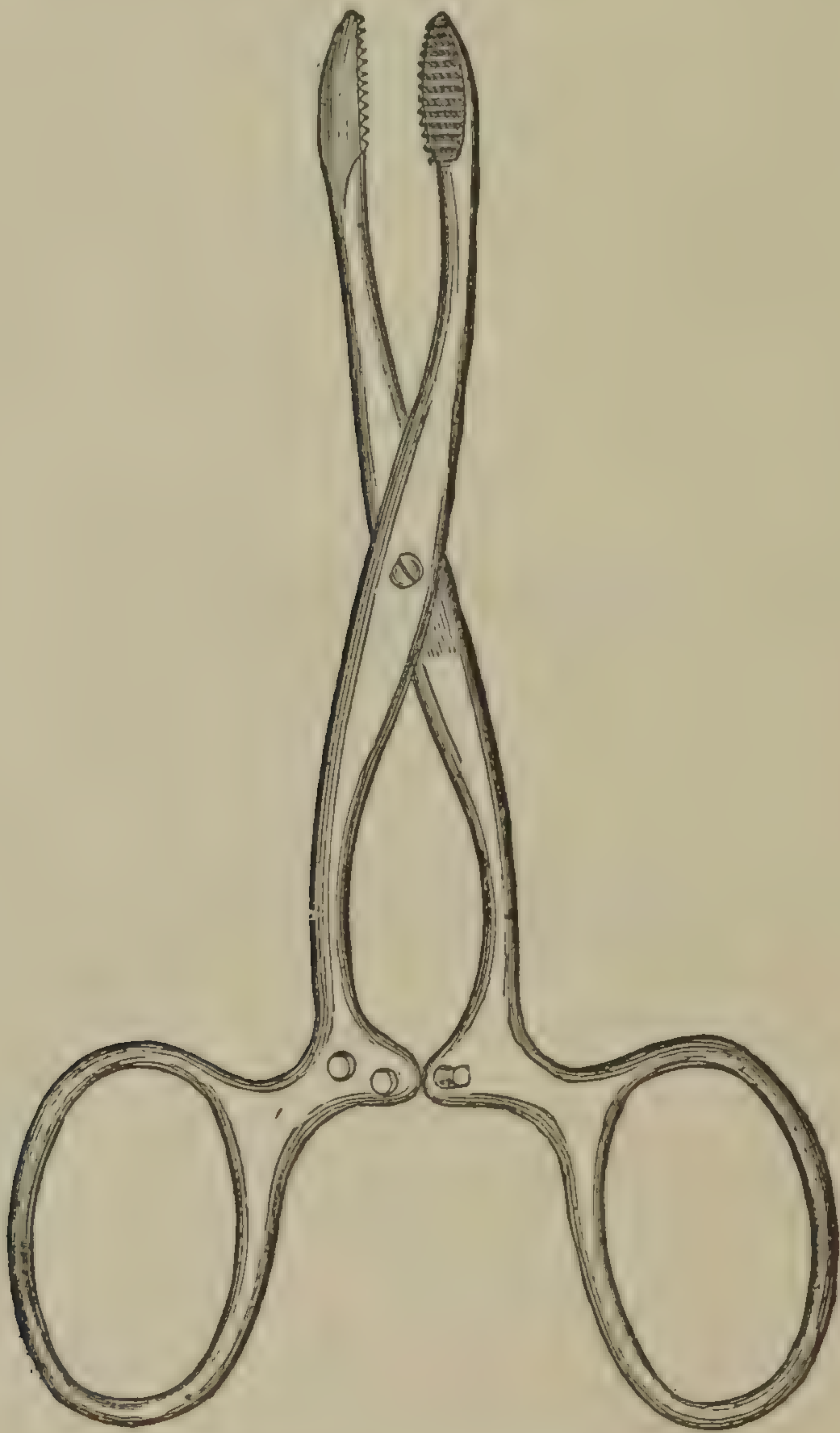
HODGE'S TROCAR.

one Wells's (Fig. 100) or Hodge's (Fig. 101) trocar with rubber tubing; one aspirator; two Nélaton's cyst-forceps; one straight pair of scissors; one pair of scissors curved on the flat; one right-angled pair of scissors; Allis's improved ether-inhaler; one flexible male catheter; three glass drainage-

tubes of different sizes and lengths, together with the rubber sheeting and the sponge used with them.

The twenty-four needles should be threaded, two on one thread of fine silk eighteen inches long—viz., No. 1 or 2, of an excellent quality furnished by Messrs. J. H. Gemrig &

FIG. 102.



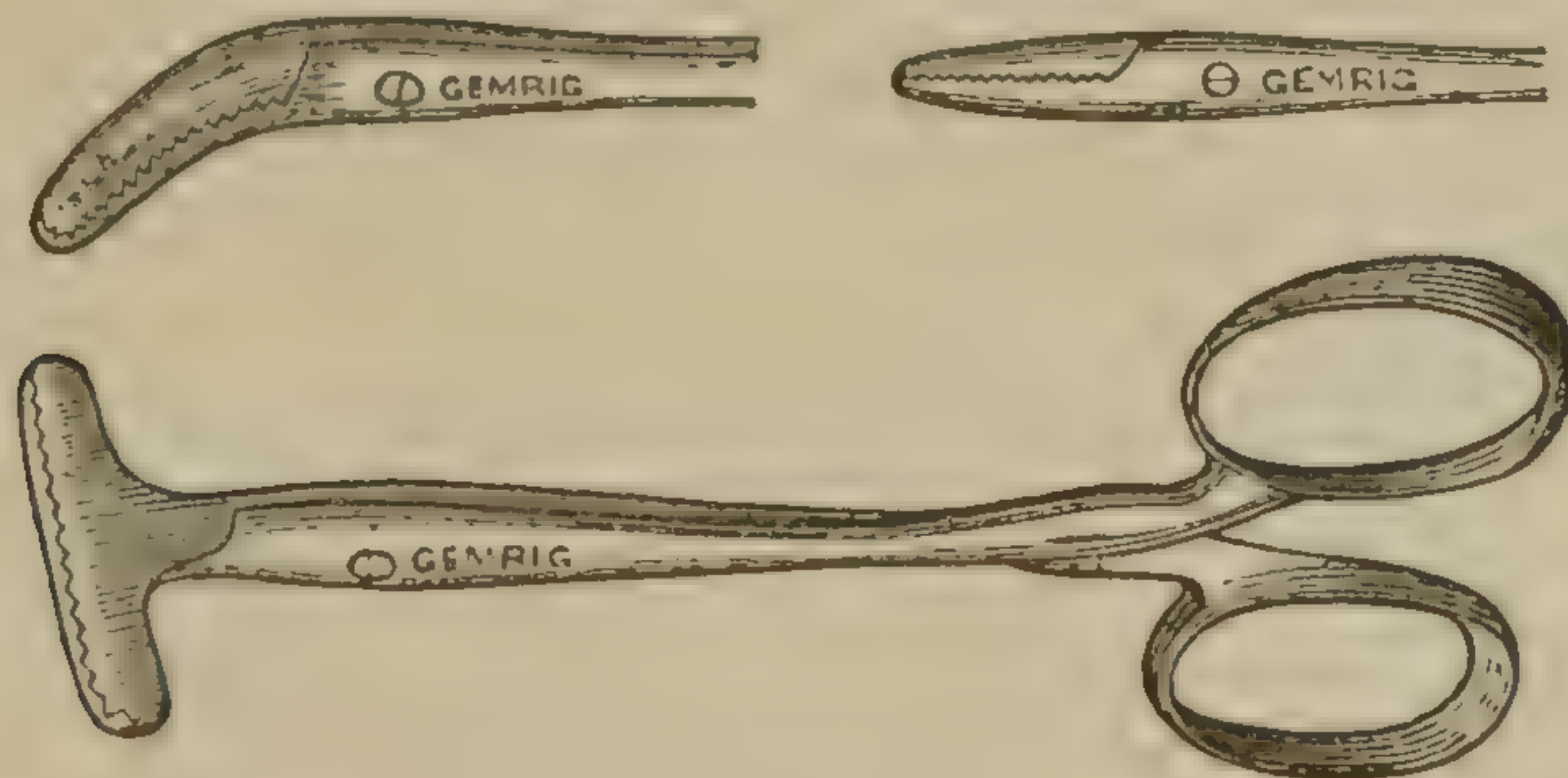
KœBERLÉ'S CATCH-FORCEPS.

Son, of Philadelphia. To keep these threads from becoming snarled, they are rolled up in a strip of muslin gauze, each pair of two needles with their thread being covered up by one

fold of the gauze. The two aneurismal-needles should also be threaded, but with stouter thread (No. 4), fully two feet long. All these armed needles should be put into a 5 per cent. solution of carbolic acid for several hours before the operation. Assorted needles of varying curves come occasionally into use, and it is always well to have several very fine needles on hand, together with the finest Chinese silk, in order to close a wounded viscus, such as the bladder or the bowels.

As an aid to the memory, it is well to have, invariably at every operation, the same number of sponges and the same number of catch-forceps, for these are the only articles likely to be left behind, and closed up in the abdominal cavity. The cautery-irons should be wedge-shaped; the iron spreader, used by apothecaries in making plasters, forms an excellent substitute. In my hands the best catch-forceps is Koeberlé's (Fig. 102). Its pointed beak catches the tissues far better than that of Wells's forceps, which looks like a crocodile's muzzle. The ordinary hæmostatic bulldog clips, or the serres-fines, must on no account be used, because, if they should lose their hold and drop into the abdominal cavity, they would be too small to be readily discovered, and might indeed be hopelessly lost in the coils of the bowels. Long strings attached to each one would, however, overcome this objection. Pean's catch-forceps with broad surfaces are often of great use, and a few should be on hand (Fig. 103).

FIG. 103.



PEAN'S CATCH-FORCEPS.

The ten sponges must be of the best quality and about the size of one's fist. Two of them should be flat, long, and

thin, such as are called by the trade "potter's sponges." They are also termed "Zymoca flat sponges," or "elephants ears." When first bought, sponges almost always contain sand. To rid them of this they are beaten, then soaked for twenty-four hours in a 3 per cent. solution of muriatic acid, and afterward washed out in clear running water. Sponges should never be put into boiling water, which destroys their elasticity, shrivels them up, and spoils them. After every operation, the sponges should be thoroughly cleansed in cold water, and immersed for forty-eight hours in a solution of washing soda (sodii carbonas) containing four ounces to the gallon of water. They are then rinsed out in running water, and placed in a 5 per cent. solution of carbolic acid. At the end of a week, they are to be taken out and hung up in a bag. Instead of a solution of soda, some prefer an 8 per cent. solution of sulphurous acid, in which the sponges are soaked for from two to four hours. This bleaches the sponges, but does not cleanse them so well as the alkaline solution.

Only two assistants are needed—and they and the surgeon should take a soap-bath, and not see on that morning any patient ill from a zymotic or a contagious disease. Their clothes should also be scrupulously clean. To ensure still further protection, each one takes off his coat, waistcoat, and neck-tie, if they are of a material which cannot be washed. The nurse must also wear clean clothing which can be washed. A few bystanders may be permitted, but they should wear clean clothing and should also take off their coats and waistcoats. They should also be cautioned, not to visit before the operation any case of contagious disease.

Upon arriving at the patient's house the surgeon, together with his assistants and the nurse, proceeds at once to get everything in readiness. The two tables may be arranged in the form of a T, covered with several thicknesses of quilts, and with a pillow on the cross-table. When the tables are thus arranged, a third one will be needed for the instruments and the spray-producer. In order to economize room and furniture, I am in the habit of putting one table at right

angles to the other, like the letter L reversed, viz., with its short arm to the left instead of to the right, thus: \perp . The woman lies on the long arm of the \perp , with her feet directed to the short arm, and, on the projecting and free portion of the table forming the short arm, are placed the tray of instruments and the spray-producer. As it takes time to get up steam in the necessarily large spray-producer, hot water should be poured into the boiler, and it should be one of the first things attended to. In order not to chill the patient, the spray solution of carbolic acid should also be heated before it is used. At present, however, when using the spray, I do not turn it on to the wound, but I start it in the operating-room two hours beforehand, and during the operation direct it away from the patient. The edges of the oval hole in the rubber sheet are next smeared with collodion, or with some adhesive preparation, but a plaster suitable for all seasons of the year is not easy to devise. Keith's formula is the following, but it will not always stick:

R. Emplastri saponis,	℥iv.	
Emplastri resinæ,	℥ij.	
Olei olivæ opt.,	℥i.	M.

After many trials, Dr. W. D. Robinson, of Philadelphia, has succeeded in making for me a very good plaster according to the following formula:

R. Emplastri saponis,	℥ij.	
Resinæ,	℥vj.	
Terebinthinæ albæ,	℥ij.	M.

I must, however, add that I now very rarely use this rubber cloth, because it is not essential and it is troublesome to manage.

Not all the instruments in one's bag, but only those likely to be needed, are now placed in the tray or in the platters, and covered over with boiling water, to which in a few minutes is added the same quantity of a 5 per cent. solution of carbolic acid. The best plan would perhaps be to pour into the tray a boiling 2.5 per cent. solution of carbolic acid. In-

to the same tray, is also laid the roll of gauze containing the threaded needles. By its side on the table, and within easy reach, is placed a small bottle filled with a 5 per cent. carbolated solution, in which are kept four small glass spools of Nos. 1, 2, 3 and 4 silk,—the last being used for the pedicle. The adhesive or rubber plaster is cut into strips of appropriate length, and the antiseptic dressing put in readiness. The trocar with tubing attached is hung on a nail near by. The sponges are carefully counted, and placed in one of two basins, arranged side by side on a table to the left of the patient. The other basin is one-third filled with a 5 per cent. solution of carbolic acid, which, later on, is reduced by the addition of pure hot water to a strength of 2.5 per cent. On a chair is placed a bucket of clean warm water.

Let me here say, once for all, that, throughout the operation, the assistant who looks after the sponges attends to them in the following way: Every soiled sponge returned to him is first cleaned in the bucket of warm water, next rinsed in the carbolated solution, then squeezed out and placed in the empty basin. This sequence must be rigidly observed, because, if the soiled sponge be plunged first into the carbolated water, the blood and serum, which it contains, will at once coagulate in its meshes, and become liable to be dislodged in the abdominal cavity as foreign bodies. Some surgeons use the carbolated solution for their instruments, and a one-to-ten-thousand solution of corrosive sublimate for their sponges. A. Martin uses the latter for both sponges and instruments.

Meanwhile, the woman, in another room, has been inhaling the anæsthetic—the best being, in my opinion, the ether fortior of our leading manufacturing druggists. It should be administered by Allis's inhaler, which largely dilutes it with air. Wells and Thornton employ the bichloride of methylene; Keith uses pure ether; Bantock resorts to chloroform, and Tait to a mixture of two parts of ether and one of chloroform, given by means of Clover's apparatus.* When the patient is wholly unconscious, her water is drawn off, and she

* *The Medical Record*, Jan. 3, 1885, p. 2.

is carried into the operating-room and laid on the table. To this table she is strapped down by a belt over her thighs, and her hands are also secured to the same belt. Her legs are wrapped in warm blankets, and her clothes are drawn up out of the way. Her chest and body are then covered by the rubber sheet, but the edges of its oval opening are made to adhere to the skin, from just above the navel to the pubic hair, thus exposing only a limited portion of the abdomen. After this, the spray is turned on and directed towards the abdomen, unless the operator has already used it for disinfecting the room beforehand, when it may be directed away from the patient. The 5 per cent. solution of carbolic acid in the tray and in the basins is diluted with hot water down to 2.5 per cent. The operator and his assistants now take off their rings, and cleanse their hands very carefully with carbolated soap and a nail-brush. They may clean and pare their nails with a penknife before the use of the nail-brush, but not after, because the knife not only does not remove all dirt, but it loosens up that which remains. Arranging themselves in their places, the operator stands to the right of the woman, the assistant who gives the ether is at her head, while the other, who attends to the sponges, takes his place near the basins on the left side of the patient. The nurse holds herself in readiness to hand towels when called for, and especially to see that a third basin always contains warm water, so that, at any stage of the operation, the surgeon can wash his hands without delay.

When everything is ready, the door is locked, and the exposed portion of the abdomen washed with a one-to-one-thousand solution of corrosive sublimate. An incision, about three inches in length, is made with a free hand, and not by nicks, in the median line below the navel, where the blood-vessels are few in number. It should end about one inch and a half above the pubes; that is to say, low enough for the pedicle to be easily reached, but high enough to avoid cutting the fold of peritoneum reflected from the bladder to the abdominal wall. The brown line running below the navel

is the surface guide, but, after cutting through the skin and fat, one cannot always hit the linea alba beneath. When the cyst is large, the recti muscles have become separated from one another, and there is no difficulty in keeping within the wide tendinous interspace. But, when the cyst is small, the linea alba is, as its name indicates, a mere line, and the knife will often go astray into the anterior sheath of one of the recti muscles. The red muscular fibres, pouting out of the opening, will be the danger-signal of one's having got off the track into more vascular regions. To recover it, a probe is passed in across the muscle to the right and to the left, and the nearest point of arrest will note the linea alba. The disadvantages arising from the wandering from the linea alba are—that the sheath of the rectus muscle being cut open, or the muscle itself being wounded, there results hemorrhage; that the wound is more jagged, and, therefore, less easily coaptated; that suppuration in the suture-tracts is more liable to take place; and, finally, that in cases of small cysts, with but little abdominal enlargement, a spasmodic contraction of the wounded muscle is very likely to embarrass the operator, both in removing the cyst and in introducing the sutures.

Again, one cannot on a grooved director cut canonically through the different layers of tissue, described with so much precision in the text-books. On the contrary, all that one needs, is to know when the knife is approaching the peritoneum. An excellent landmark is the thin layer of fat overlying the peritoneum. So, after pinching up the abdominal wall to estimate its thickness, the surgeon can boldly cut down through the skin and its underlying fat, but somewhat cautiously through the aponeurotic structures until the second layer of fat is reached. Practically, therefore, he need regard but the following layers; skin with its underlying fat, the intermediate tendinous or muscular structures, the supra-peritoneal fat and the peritoneum.

Before the abdominal cavity is opened, all bleeding is stopped by the use of catch-forceps, of which one dozen will sometimes dangle from the wound. When the hemor-

rhage has been wholly stayed, and not until then, the peritoneum is hooked up by a delicate uterine tenaculum and nicked open, or else it is caught by two catch-forceps, raised up, and nicked open between them. On a broad grooved director or on the finger, this opening is slit up for a distance of about two inches, either by a right-angled pair of scissors or by a probe-pointed bistoury. A little serum usually escapes, and the nacreous wall of the cyst comes into view. This is called an exploratory incision, for by it the diagnosis is confirmed, the presence of adhesions ascertained, and the possibility of completing the operation determined. When it has been decided to go on with the operation, more working room will be needed, and the wound is therefore enlarged by the scissors, two fingers being used as a guide to prevent injury to the omentum, or to any chance knuckle of bowel that may lie in the way. The size of the incision will depend upon the character of the cyst and on the number of its adhesions. Hence it may range from a length of three inches, to the distance from ensiform cartilage to symphysis pubis. An incision contained between the umbilicus and symphysis pubis, is technically called a short incision, and one extended above the umbilicus, a long incision. Should it be found needful to prolong the wound to a point above the umbilicus, the incision is usually carried to the left of the navel and brought back in a curved line to the linea alba. This is done to avoid the round ligament of the liver and its vessels, which come in there from the right side. Keith, however, cuts directly through the navel; and I find this straight incision to be superior in every respect to the curved one. Other things being equal, the short incision is safer than the long one; but it is a good rule to have an opening large enough for easy manipulation, and for the easy withdrawal of the cyst. For instance, a large monocyst without adhesions, after being emptied, can, like a wet rag, be pulled out, hand over hand, through a very small opening, whereas a much smaller polycyst, which cannot be wholly emptied, and which is more or less adherent, will

need a long incision. I once removed an oligo-cyst, weighing one hundred and twelve pounds, through an incision barely admitting my hand; while I had to open the abdominal cavity, from ensiform cartilage to symphysis pubis, in order to remove a solid ovarian fibroid tumor weighing but eighteen pounds. Both patients recovered, but the chances were, of course, more against the woman with the long incision. To avoid the escape into the abdominal cavity of any blood from the wound, and to prevent the soiling of the operator's hands, a clean napkin wetted with the carbolated water is doubled over each edge of the incision.

Whenever the cyst-wall in the line of the incision is glued by adhesions to the parietal peritoneum, the latter is liable to be mistaken for the former, and accordingly to be stripped off from the abdominal wall. To avoid this very serious error, either proceed with the cutting, until the cyst-wall unmistakably comes into view or is opened, or else extend the incision upward until a point is reached where the cyst is free from adhesions. Adhesions binding the cyst to the abdominal wall are of importance, only from the troublesome oozing their rupture often gives rise to. To lessen this risk, they are to be sundered by the finger whenever possible. Should the scissors be used, the adhesion bands must be snipped close to the surface of the cyst, and not to that of the abdominal wall. Thus, a free end is gained, which may, if needful, be subsequently tied, or in which the dangling blood-vessels may the more readily constrict. All thick and long bands of adhesion should be tied in two places, and be divided between the ligatures. These ligatures should consist either of very fine silk or of gut. For isolated vessels, the latter are the better ones, but the silk is more suitable for tying en masse a group of bleeding vessels or for pursing up an oozing surface by an in-and-out stitch. A very important rule, on the observance of which one's success greatly depends, is, never to let a bleeding point or an oozing surface get out of sight. It must either be ligatured at once, or else seized by catch-forceps and tied later if needful. If the delicate

omental apron be found glued to the cyst, it should be carefully detached with as little tearing and splitting as possible, for each shred will bleed, and so will the fork of the split. It should then be turned out of the abdominal cavity on a clean napkin, wetted with the carbolated solution. If its bleeding vessels be few, each one may be tied with gut; but if they are many, the torn portion of the omentum should be tied en masse or in sections, and the ligatures cut off close to the knot. All shreds and ragged ends of omentum must be trimmed off, and it is then returned to the peritoneal cavity.

When all the adhesions within reach, and those that do not demand great force, have been severed, it will be time to tap the cyst. This should be done with a large-sized trocar, such as Wells's, which is furnished with spring teeth to prevent it from slipping out of the cyst. Any trocar will do, provided it has a large bore, so that the vent may be free, and that none of the acrid fluid can escape along its side into the abdominal cavity. In order to save time, neither Schröder nor Martin use a trocar. They incise the cyst, and try, by turning the woman on her side, by lateral pressure and by traction on the cyst-wall which then fills up the abdominal incision, to direct the contents externally. Frequently, however, some of the fluid escapes into the abdominal cavity, but they contend that, if antiseptic precautions be taken, no harm accrues.* Although dissenting from this opinion, I must confess, to having had some of the contents of the cyst escape repeatedly into the abdominal cavity, without doing any harm whatever. But then, I always irrigate the cavity and wash it out with an abundance of pure warm water. Always tap at the upper angle of the wound, because, as the cyst collapses, the trocar is drawn downward toward the lower angle. Hence, were the trocar entered low down, it could not travel with the collapsing cyst, which would therefore slip off. While the fluid is flowing, flat sponges should be packed in between the abdominal wall and the cyst, and the edges of the incision should be pressed firmly against them, so that

* *Berlin. klin. Wochenschrift*, 1883, No. 10.

the peritoneal cavity may not receive a single drop of that which frequently escapes along the side of the trocar. To avoid this accident—which, without being a very serious one, is yet not to be invited—some ovariologists before tapping turn the woman well over on her belly, and over the edge of the table; but this is liable to cause a protrusion of the bowels; which is, in fact, a more dangerous accident than the entrance of some of the fluid into the abdomen. Rosenbach, indeed, reports that during the extraction of biliary calculi through an abdominal incision a cure resulted, although several calculi were lost in the peritoneal cavity.* Should the mother-cyst not collapse, on account of its containing a few other large cysts, the point of the trocar, without being withdrawn, can be made to enter each one. But if the child-cysts are many and small, the trocar is withdrawn, the opening enlarged, its edge seized by several pressure-forceps, and the hand introduced to break up these cysts.

Before this hand can again be used for separating adhesions, it must be carefully cleansed with soap, and dipped into the carbolated solution in the tray of instruments.

The empty cyst is next gently pulled out through the abdominal wound. It is, however, so slippery that this cannot ordinarily be done with the hands alone. A strong forceps with a firm grip is needed, and one of the best is Nélaton's. While the cyst is being withdrawn, the bowels are sheltered from the air, and from the spray, if it be directed on the wound, by one large flat sponge, and the abdominal cavity must also be packed with smaller ones at every exposed point; and one of them should always be placed between the womb and the bladder.

In the majority of cases, there is not much difficulty in freeing the cyst from its ordinary attachments and in reaching its pedicle. But, should adhesions bind the cyst to the adjacent viscera, matters will not go on so smoothly. Such adhesions to bladder, liver, bowels, or to other important organs, sometimes present difficulties which are insurmount-

* *Medical News*, Feb. 3, 1883, p. 130.

able. The problem here is to sever these bands of adhesion without injuring the viscera to which they are attached. When these adhesions are numerous or very firm, much advantage will be gained, by having the assistant put his hand within the cyst and stretch its wall, while the operator severs the adhesions over it. By this means the adhesions can be better broken off close to the cyst, which is the all-important course to pursue in visceral attachments. Sometimes it will be needful to peel off the outer and non-secreting layers of the cyst and leave them behind—sometimes to cut off the adherent portion of the cyst and scrape off or strip off the secreting surface. Whenever the stalk of the tumor can be reached before all the adhesions are severed, it will be well to catch it with one or two pressure-forceps, or even to tie it and cut it off between two ligatures, like the umbilical cord. This will prevent bleeding from the torn surfaces of the cyst. When the cyst is closely adherent to the edges of the abdominal incision, either extend the wound upward until a free point is reached, and work downward on the adhesions, or else cut into the cyst, empty it, and seize with strong forceps its inner surface just beyond where the adhesions begin. The sac is then inverted by traction, which will break up its adhesions to the abdominal wall, the last portions to be freed being those attached to the edges of the incision. This prevents the stripping up of the peritoneum. Should the appendix vermiformis be so adherent to the cyst as not to be detached, it must be ligated in two places, between which it is to be cut, in order that its contents may not escape into the abdominal cavity. The fecal plug in each distal end should also be carefully squeezed out. Double ovarian cysts sometimes fuse together, and, rupturing at the point of fusion, form apparently one cyst. Such a cyst will have two pedicles, and will be very puzzling to the inexperienced operator.

When the cyst has been freed from its attachments and turned out of the wound, the very important question comes up of the treatment of the stalk or pedicle. Shall it be secured by a clamp? shall it be burned off by the actual cautery?

or shall it be tied, cut off, and dropped back? The first is called the extra-peritoneal method; the others, the intra-peritoneal. For many years, the clamp claimed the most advocates, but it has lost ground on account of possessing the following disadvantages: By keeping the wound open it prevents a strictly antiseptic treatment; the stalk sometimes sloughs below the line of constriction, and conveys putrilage into the abdominal cavity; the stalk always becomes united to the abdominal wall, hence, when it is short, the womb is dislocated or it is too much dragged upon. Then, again, in one-third of the cases the oviduct has a trick of remaining open, and the woman will menstruate indefinitely from the abdominal cicatrix. This is owing to the fact, that the clamped portion sloughs off too early for a firm plug of cicatricial tissue to be formed, and the oviduct is therefore liable to stay open. In my first case of ovariectomy this happened, and one year later the cicatrix degenerated into a malignant growth, which destroyed the life of my patient. It is, however, probable that, in this instance, the cystic disease of the ovary was malignant, although the sac did not look so at the time of its removal. Another disadvantage arising from the use of the clamp, is the subsequent weakness of the cicatrix at its site, and the liability of ventral hernia to form there. These are the objections to the clamp, and they are so valid that, at the present time, all distinguished ovariotomists have abandoned its use. Kœberlé, who was the last to abandon it, had up to 1880 a mortality with it of 11%. Since then he has had 74 cases with 5 deaths.*

The actual cautery, performed by Paquelin's instrument or by platinum-tipped irons, which do not scale off or discolor the tissues, is theoretically the very best way of dealing with the stalk. No foreign body, beside the charred portion of the stalk, is left within the abdominal cavity; but, on the other hand, it cannot always be trusted to close the vessels. On this account it is looked upon with disfavor by all ovariotomists, with the exception of Keith. His method is as fol-

* *Revue de Chirurgie*, 1885.

lows: The pedicle is spread out evenly within Baker-Brown's clamp, so as to get equable compression. The cyst is cut off, leaving a stump about an inch in height above the clamp. To protect the parts from heat, a folded napkin wetted in the carbolated solution is tucked under the clamp. The stump is next carefully dried, and then burned slowly down to the level of the clamp, by wedge-shaped cautery-irons at a brown heat. They give off a whistling sound during the process. The thick end of the stump can be more quickly burned down, but the thin end should be burned very slowly, and the blades of the clamp, by prolonged contact with the cautery-iron, must also be made hot enough to dry up and shrivel that portion of tissue which they compress. In order not to disturb the stump after it has been cauterized, it is best to clean out the peritoneal cavity first, and to leave this treatment of the pedicle for the last thing. Before removing the clamp, which is to be unscrewed very slowly and carefully, one side of the pedicle is seized by a catch-forceps, by which it is kept in sight and out of harm's way if the peritoneal cavity needs further cleansing.

The plan of treating the pedicle most in vogue, and the one which I adopt, is that of the ligature—one of fine carbolated silk, the finest compatible with safety. The ends are cut off close to the knot, and the stump is dropped into the peritoneal cavity, where the silk, being animal tissue, will in time become disintegrated and absorbed. Now, when I say silk, I mean silk, and not silver or gut ligature. Silver, being inelastic, cannot bind a shrinking stalk; while the gut is a treacherous ligature, and will sooner or later bring one to grief. It slips in the tying, it is liable to untie, it gives instead of shrinking, and it is too short-lived for the obliteration of large vessels.

The reasonable objection has been urged that, since the abdominal cicatrix left by the use of the clamp is liable to reopen every month to give vent to menstrual fluid, the same phenomenon will, by this intra-peritoneal method, happen within the abdominal cavity and expose the woman to all the

risks of a hæmatocele. But fact is here opposed to theory, for it has been found that either the oviduct in the stump atrophies into an impervious cord of fibrous tissue, or that its raw end, by contracting adhesions with the surrounding tissues, becomes hermetically sealed. It might also be supposed, that the distal end of the ligatured stalk would slough and expose the woman to septic peritonitis. But such sloughing rarely happens, and for the following reasons: From shrinkage of the stump the constriction is lessened, and the capillary circulation is re-established: or the peritoneal surfaces, on each side of the narrow and deep gutter made by the fine silk, will bulge over and touch one another. Adhesion then takes place between the two, and the blood-vessels, which shoot over from the proximal, or uterine, side of the ligatured stump, will carry life into the distal end; or lymph, exuded by the irritation of the ligature, will throw a living bridge across the gutter in the stalk; or, what is the least desirable, the raw end of a long stalk glues itself to any peritoneal surface with which it may come in contact. I say least desirable, because, sometimes, such an adhesion makes a kink in the bowel, and may so constrict it as to give rise to fatal obstruction. To prevent this accident, Thornton stitches with gut the raw end of the stump to the broad ligament, to which it adheres; while Bantock catches it up out of harm's way, by including it in the lowest abdominal suture, which, being of silk-worm gut, can be left in for a long time. If the stump be short, it stands upright, and does not then need this treatment.

If the stalk be a thick one, it is transfixed by a blunt needle, or by an aneurismal needle, threaded with a double ligature, and is tied on either side, each half by itself, and then the whole is further tied by the free ends of one of the ligatures. The "Staffordshire Knot," recommended by Tait, may also be used. If the stalk be a broad one, it is tied in three or more sections by cobbler's stitches. If very thick or broad, it is a good plan to catch the stalk in Dawson's clamp, which compresses it circularly, and to transfix and tie it in the

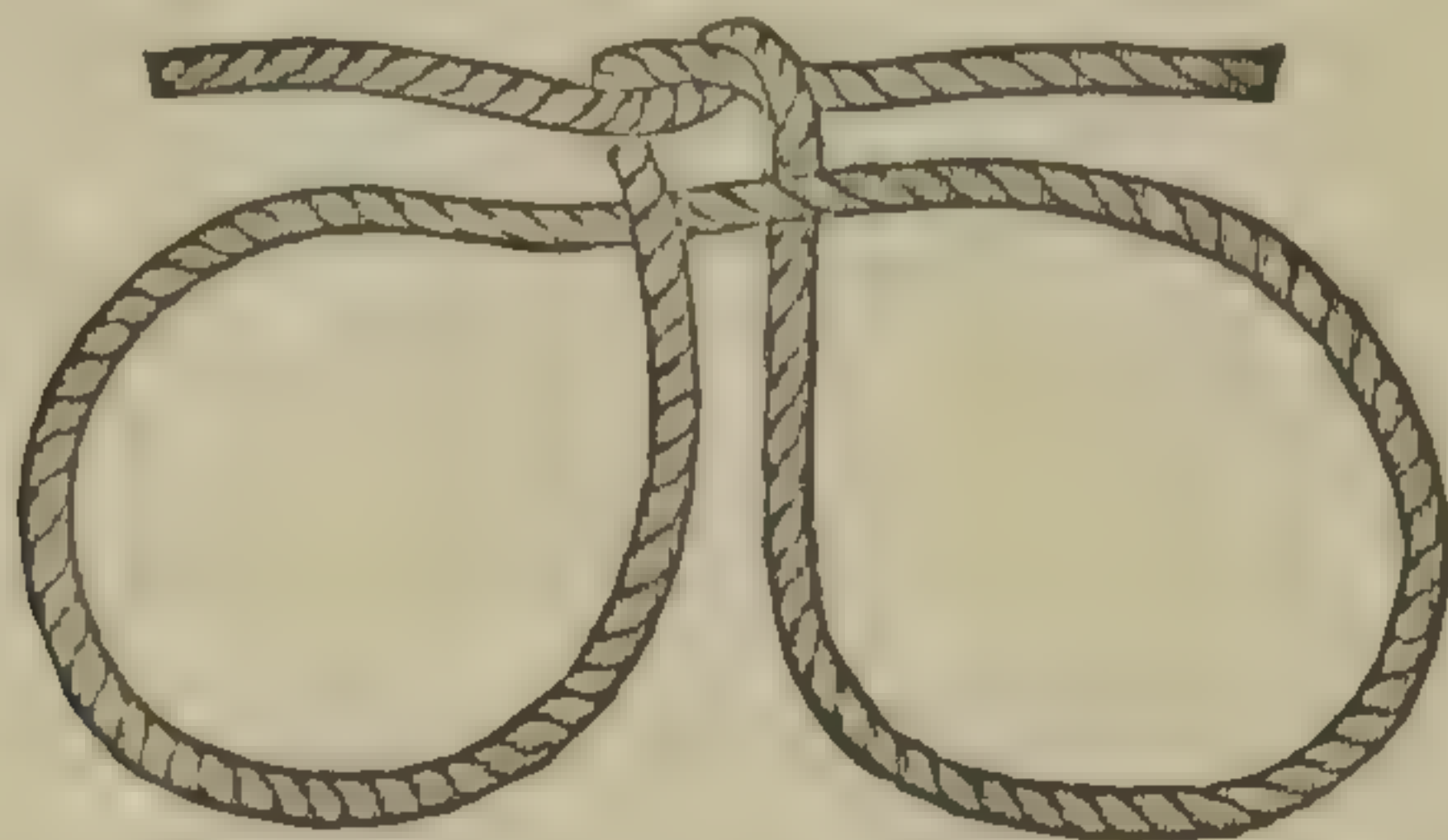
furrow made by the clamp. This lessens the risk of secondary hemorrhage, which is usually caused, either by the slipping off of the ligature, or by its loosening through tissue-shrinkage. When this clamp is used, the pedicle need not be tied until the wound is ready to be closed. The stalk must be cut off at a distance from the ligature of not less than three-fourths of an inch, so as to leave a button of tissue sufficiently large to prevent the loops from slipping off. In short and broad stalks, the outer or broad ligament portion, which is thin and membranous and sustains most of the tension strain, is liable to slip out of its ligature and cause a fatal hemorrhage. To avoid this accident, the ends of the corresponding ligature may, before being tied, be repassed in opposite directions through the stalk very near its margin to form the cobbler's stitch. Another way, is to pass a fine silk thread through the thin portion of the stalk, about one-third of an inch from its edge, and tie it. In the notch thus made, and below the knot, is laid and tied the outer ligature.

In anæmic cases Thornton ties the arterial side of the pedicle first, but, in young and vigorous women, he ties the venous side first, so as to deplete the woman by gorging the tumor with blood. While the cyst is being cut away, the abdominal cavity must be so protected by sponges that not a drop of blood shall fall into it. A dilated oviduct in the pedicle tends to suppurate; hence, in such a case, the ligature should be applied as close to the womb as possible, so as to get below the expanded portion. Before the cyst is cut away, the pedicle should be seized on one side by a pressure-forceps, and kept more or less in sight until the wound is ready to be closed up. This will also prevent the ligatures from being rubbed off by the sponges, while the abdominal cavity is being cleansed.

The "Staffordshire Knot" (Fig 104) is made as follows: The pedicle is transfixed by an aneurismal needle armed with a double thread. Into the loop of this thread are passed the ends of the ligature, which has been laid on the abdomen loosely around the pedicle. The needle, upon being with-

drawn, brings with it these two ends of the ligature, which will now lie above their own loop. One of these ends is passed under this loop, and a square knot firmly tied. The free ends are now thrown around the pedicle and again tied. Thus, it will be seen, that this mode of securing the pedicle,

FIG. 104.



THE STAFFORDSHIRE KNOT; FROM TAIT.

accomplishes by two knots, what the ordinary double ligature effects by three knots.

The ligatures, which have been applied to the pedicle or to adhesions, either become encysted, or in time disappear by absorption; but sometimes, they behave like foreign bodies, and are discharged by an abscess opening usually in the abdominal wound. This happened to two of my cases, without however doing harm. A stubborn fistulous opening, following an abscess in the wound, should always lead to the suspicion of the presence of a ligature. Dr. T. Keith* and Dr. J. H. Thompson of Rome, Italy, each report a case in which the ligature was passed by the urethra. M. Quenu had a case in which more than a dozen silk ligatures came away per vaginam.†

In some exceptional cases the pedicle is so short or so rotten, that neither the ligature nor the cautery can be used. The vessels in the pedicle must then be secured by several pressure-forceps, the handles of which, emerging like a drainage-tube from the lower angle of the wound, are to be tied together. After the lapse of forty-eight hours, they are to be removed with great care.

* *Contributions to the Surgical Treatment of Tumors of Abdomen*, p. 17.

† *Archives de Tocologie*, Jan. 15, 1886, p. 28.

LESSON XXXIII.

OVARIOTOMY, CONTINUED.

GENTLEMEN: To-day we continue the subject of ovariectomy, which, being an important one, needs time for its discussion. Sometimes the cyst has no stalk, but lies between two folds of the broad ligament, or else it is bound to the bladder, womb, and the pelvic tissues by intimate adhesions which cannot be safely severed. Formerly, under such circumstances, the abdominal wound was hastily closed up and the case abandoned. Now, thanks to Miner, of Buffalo, New York, we can fall back on enucleation, and need rarely be foiled.* This operation is performed, by slitting open the peritoneal capsule of the sac at points close to its attachments, by introducing one finger or more into the opening, and by stripping off this serous and vascular envelope, up to where the vessels enter the cyst-wall and become capillary. The artificial stalk thus made, is to be treated precisely like a natural one—that is to say, by clamp, ligature, and cautery, or, if it does not bleed, by nothing whatever. This operation I have repeatedly performed, but it is seldom easy, and is always anxious work. Should the cyst be so wholly adherent to the viscera as not to be even enucleated, an incision is made into it. It is then emptied, thoroughly cleansed, and the child-cysts are also crushed by the hand. The edges of the opening thus made in the sac, are now included in the stitches of the abdominal wound, but the latter is kept open either by a large cloth tent at the lower angle, or by two glass drainage-tubes, one at each angle, running down into the sac. Sometimes, it may be needful to tie the adherent portion in sections and to cut the free portion away. A drainage-tube

* *Transactions International Med. Congress*, 1876, p. 801.

must then be inserted at the lower angle of the wound. This expedient has the sanction of Atlee and Olshausen, who have reported successful cases thus treated.* My own practice in such cases would be, after breaking up the child-cysts, to gather together the free portion of the cyst and bring it out at the lower angle of the wound. A short nickel-plated steel drainage-tube of large bore is inserted, the sac firmly clamped to it by a small wire *écraseur*, and the redundant portion cut away. Into this metal tube is passed a glass drainage-tube, long enough to touch the lowest portion of the sac.

In such cases, when feasible, I think it would also be well, to adopt Freund's plan of tying the pedicle and severing it, in order to lessen the blood-supply to the cyst.†

The sac having been removed, the other ovary should be examined, and, if diseased, be tied and cut off. From the sundered bands of adhesion, more or less bleeding has been taking place, which must now be attended to. It can usually be stopped by pressure with a sponge or with a finger, or with sponges wrung out of very hot carbolated water. For single vessels, torsion will usually succeed, but if it does not, fine carbolated silk or gut ligatures must be used; and it is wonderful how many can be applied without materially compromising the safety of the woman. I once tied over thirty vessels in a lady sixty-eight years of age, who recovered without any symptoms of peritonitis. The free ends of the ligatures should always be cut close to the knot. Stubborn oozing surfaces can very generally be staunched by searing them with Paquelin's thermo-cautery, or by passing a needle armed with fine silk under, and ligating any vessel that may be detected leading up to the seat of the oozing. In some cases, nothing answers so well as the pressure of the finger moistened with alcohol, or with a drop or two of the ferric subsulphate or of the tincture of iodine. In oozing from inaccessible points in the pelvis, a sponge dipped in the undiluted solution of iodine or in Monsel's solution of iron, and

* *Monthly Abstract*, July, 1877, p. 334.

† *Boston Med. and Surg. Journal*, Aug. 24, 1876, p. 219.

afterwards well squeezed out, may be pressed firmly down for a few moments into Douglas's pouch. When the oozing comes from a large surface of the abdominal wall, it may finally be arrested by the doubling of the raw surface on itself. The fold thus made, is then secured, either by a long acupuncture needle, or by cobbler's stitches passed through from skin to skin. Forty-eight hours after, this needle or these stitches should be removed. For this ingenious device we are indebted to the late Dr. Kimball of Lowell, Mass. Should all these measures fail, put in a drainage-tube, close up the abdomen in the manner about to be described, and temporarily lay over the dressings some heavy weights, such as bags of sand or of shot. This plan I have not been obliged to resort to, but it has the sanction of Nussbaum, who uses two large bricks, and it is worthy of being borne in mind.* In my hands, an elastic flannel binder, pinned very tightly over a large roll of cotton wool, has made pressure enough to check the hemorrhage.

The toilet of the peritoneum next comes in order. By this is meant the peeling off from the peritoneum of plastic deposits, the removal of the sponges packed into its cavity, and the careful cleansing away of all fluids and of every blood-clot. In the search for all such foreign bodies, or, indeed, for obscure oozing-points, the reflector of the ophthalmoscope or Colin's illuminating lamp will give much aid. When some of the contents of the cyst have escaped into the abdomen, or when much oozing has taken place from extensive adhesions, the peritoneal cavity must be washed out with warm water. Quart after quart is to be poured in and paddled about with the hand until it returns clean. Douglas's pouch, and the peritoneal fold between the bladder and the womb, are favorite localities for the collection of blood or of serum, and should therefore be thoroughly mopped out by small sponges on holders, otherwise peritonitis or septicæmia may result, which are the two great factors of death in unsuccessful cases. When this has been thoroughly done, a clean

* *British Med. Journal*, Oct. 26, 1878, p. 617.

sponge is placed in Douglas's pouch, another in the sulcus between the bladder and the womb, and a third, a large and broad flat one, is laid over the intestines under the wound, to catch the blood that may drop from the needle-tracks. Each needle is passed from within outward, a quarter of an inch away from the peritoneal edge of the wound, and is made to emerge at the same distance from its cutaneous edge. If the recti muscles are included in the sutures, there is said to be a liability to the formation of abscesses in the suture-tracks. Hence, Wells advises that the peritoneum and skin should be pinched together, and that the needle should be passed through them alone without perforating the muscles. Yet, I believe, that from a too close observance of this rule come many cases of hernia in the tract of the wound, and that, were the recti muscles more closely coaptated, they would not recede from one another, and thus aid in the formation of a rupture. My own rule is, to include these muscles in the suture whenever they are exposed to view. The sutures should lie about one-third of an inch apart. The needles should be lance-pointed and held by a needle-holder. In fat women it is not always easy to get the two surfaces of the wound in exact coaptation; consequently, more or less puckering and eversion of the edges may take place. To avoid this, it will be well, before passing the needles, to bring the edges of the wound together, and make, with a fountain-pen, transverse lines at proper intervals across the incision as landmarks for the introduction of the sutures. These cross-lines are also of advantage, whenever the abdominal walls are too tense for accurate coaptation, as after oöphorectomy, after the removal of a small abdominal tumor, or after an exploratory incision for a solid tumor which cannot be removed. In these cases, indeed, it would be well to make the cross-lines the first step of the operation, before even the abdominal incision has been made.

The reasons why the needle is made to enter the peritoneum first are, that the stitches are lodged more evenly on that vulnerable surface, and with less injury to it, such as the strip-

ping of it off from the abdominal wall; and, further, that a stray knuckle of bowel is not so likely to be wounded by the upward, as by the downward thrust of the needle. The object of including the peritoneum in the stitches is, to bring in contact two long and narrow ribbon-like surfaces of a membrane, which will quickly unite—so quickly as to forestall any formation of pus in the overlying tissues, and to bar the entrance of this, or other septic fluid, from the wound in the abdominal wall. Another advantage is, that this inclusion of the peritoneum, by presenting an uninterrupted surface of parietal peritoneum to the visceral peritoneum, prevents the adhesion of the omentum and of the intestines to the internal lips of the wound, which otherwise takes place.

When all the sutures have been passed, their ends on one side are loosely twisted together into a single strand, which is securely caught by a pressure-forceps. The same thing is done with the ends on the other side. A finger of each hand is now passed down into the centre of the wound, and the middle portion of all the upper sutures and of all the lower ones are separated from one another, by being drawn to opposite angles of the wound. This permits the removal of the sponges, and, if they are stained with blood, the further search for some overlooked bleeding vessel. To guard against twisting of their convolutions, the bowels, still further disturbed by these final manipulations, are now restored to their natural position, and the omentum, after being again examined for some bleeding vessel, is gently spread out over them. The forceps and sponges are then counted, to see that not one has been left in the abdominal cavity. The importance of this cannot be too strongly impressed upon the operator, for distinguished ovariologists have overlooked these articles, and have left them behind in the abdominal cavity—a sponge and a bulldog forceps in one case.* Tait has heard of ten

* *Lancet*, May 26, 1877, p. 783; *British Med. Jour.*, Jan. 28, 1882, p. 115; *Ibid.*, Dec. 25, 1880; also, *Ovarian and Uterine Tumors*, by Spencer Wells, London ed., p. 336; H. P. C. Wilson, in *Transactions American Gynecological Society* for 1885.

such cases.* It is, indeed, sometimes no easy task, to find a missing sponge when lost in the convolutions of the intestines. The sponges therefore should not be much smaller than the fist.

Before closing the wound, the operator removes the pressure-forceps, and catches in one hand all the ends of the sutures on his side, his assistant does the same thing on the other side, and the edges of the wound are brought together by a firm pressure, which also chases the air out of the abdominal cavity. To stop the bleeding from the needle-tracks as soon as possible, each suture is rapidly tied and by the surgeon's knot. When the whole wound has been closed, and not till then, the ends of all the sutures are gathered together in one hand, and they are cut off about two inches from the knot by one snip of the scissors. This saves precious time, which would be lost, were each suture by itself to be cut after being tied. At gaping points of the wound, intermediate superficial stitches should be put in. In fat women several such stitches will usually be needed.

Dressing of the Wound.—After the wound has been closed, the rubber apron is removed, and the abdomen cleansed and dried. The wound may now be dressed according to Lister's plan. This consists, first, of a narrow protective of prepared oiled silk, moistened by a 1:40 solution of carbolic acid; next, of one broad layer of antiseptic gauze wetted with the same solution; and over this eight folds more of the dry gauze, having a piece of mackintosh interposed between the seventh and the eighth layer. The lamp is now blown out, and, the spray-jet being turned away from the abdomen, the dressing is secured by an elastic flannel binder, the rucking of which can be prevented by tapes pinned to it around each thigh. Most of the leading ovariologists, however, employ simpler dressings, which have been found equally antiseptic. Wells covers the wound with a dry dressing of thymol cotton, kept in place by long strips of adhesive plaster, going two-thirds of the way around the body. Over all is pinned a flannel binder.

* *Diseases of the Ovaries*, by Lawson Tait, 4th ed., p. 261.

The thymol cotton is prepared, by steeping absorbent cotton wool in a solution of one part of thymol to one thousand of water, and drying it. Keith dresses the wound with gauze wrung out of a 1:8 glycerole of carbolic acid. On this are laid several layers of dry carbolated gauze, next some cotton wool, and over all a flannel binder. Thornton uses Lister's gauze and the mackintosh, but without the protective. This dressing is secured by adhesive straps. On these are laid several folded napkins, and over all a flannel binder is pinned very tightly. Bantock resorts to dry thymol gauze. Tait uses nothing but ordinary absorbent cotton. Salicylated cotton I have found to answer so well, that for years I used nothing else. It is made, by steeping two parts of absorbent cotton in a solution of one part of salicylic acid to two of commercial ether, and afterward drying the cotton by a low heat. Lately, I have been resorting to Keith's dressing, but it probably possesses no greater advantages.

The flannel binder having been pinned on, the night-dress is pulled down, and the patient put to bed. The opium suppository containing one grain of the watery extract is slipped into the rectum, the six bottles of hot water are applied to different portions of the body, and she is covered with warm blankets. The tables, tubs, and other articles, used in the operation, are now removed, the room is darkened, and she is left alone with her nurse, who has positive instructions to admit no one besides the physician.

Drainage.—When blood in small quantities is effused into the peritoneal cavity, coagulation usually takes place, the serum is then absorbed, the clot becomes organized, and no harm results. But, when blood in large quantities collects in Douglas's pouch, it may behave as a foreign body and cause mischief. When, also, blood is mixed with serum, coagulation is not so likely to take place; the blood-corpuscles then are liable to break down, the fluid to become putrid, and septicæmia to set in. For these reasons the removal of these fluids, by different modes of drainage, has long been put in practice. The best mode is by a glass tube passed down to

the bottom of Douglas's pouch through the abdominal wound, and not, as has been recommended, through a special opening made for it in the roof of the vagina. Drainage is at present very rarely resorted to, by those operators who use strict anti-septic precautions, for they contend that septic changes in the blood do not then take place. Wells has virtually given it up, Thornton and Meredith, who both use the spray, resort to drainage occasionally, while Keith, Tait, and Bantock, who have abandoned Listerism, are warm advocates of it. This question is a very important one, because a drainage-tube tends to the formation of a ventral hernia, and, being a foreign body, is in itself hurtful, and therefore should not be resorted to, unless it will do more good than harm.

After a careful consideration of the subject, I am forced from experience to believe, that between the two extremes there lies a golden mean, and that drainage, even when the spray is used, is needed under the following conditions:

(*a*) Whenever a purulent or a colloid cyst has burst, and its contents have escaped into the cavity of the abdomen, either during the operation or some days beforehand.

(*b*) Whenever the contents of the cyst are putrid or purulent, and septic symptoms or those of peritonitis are present.

(*c*) Whenever a large amount of ascitic fluid is found in the abdominal cavity.

(*d*) Whenever all oozing cannot be stopped, or whenever four drachms or more of pure blood, or especially of a sero-sanguinolent fluid, can be squeezed out of the sponge in Douglas's pouch, when removed just before the closure of the wound. But it must not be overlooked, that the mere irritation from this sponge will cause the exudation of a pale red serum, which does not imply the need of drainage.

(*e*) Whenever there are extensive adhesions in a person advanced in life; or whenever it has been deemed needful to cleanse the peritoneal cavity by irrigation.

(*f*) Whenever the operator is in doubt what to do.

Should it be deemed needful, for some of the above reasons, to make use of drainage, a glass tube, open at both ends and

about six inches in length, is passed through the salicylated cotton or other dressing, then between the two lowest stitches, down to the bottom of Douglas's pouch. A wire suture is first introduced between these sutures and left untwisted, its object being to close firmly the opening, left by the removal of the tube, and to hasten its union. Otherwise, a weak cicatrix results, tending to the subsequent formation of hernia. Keith's drainage-tube of three sizes is the one that I prefer. Its lower end is perforated with holes, and its upper end has a shoulder which keeps it from slipping into the abdominal cavity, and also enables it to hold a piece of thin rubber sheeting about eighteen inches square. In the centre of this, a small circular hole is made, which, by stretching, is sprung over the tube. The mouth of the tube is covered by a cup-shaped sponge, wrung out of a 5 per cent. solution of carbolic acid, and over this the sheeting is folded four times. The flannel binder may either be pinned over the drainage-tube, or else it may be slit at the tube and passed on each side of it, leaving the sponge and rubber sheeting outside of the dressing. They are then best held in place by a narrow strip of flannel, so as to permit inspection without interfering with the main dressing. Several times a day the sponge is removed, squeezed out, cleansed in a 5 per cent. solution of carbolic acid, and replaced. This, in a general hospital, had better be done under the spray. Bloody serum collecting in this tube, is sucked out either by a fine rubber tube attached to a syringe, or else by the long nozzle itself of the ordinary uterine syringe. Whenever hæmorrhage is indicated by the escape of pure blood from the tube, Tait injects into it a solution of perchloride of iron.*

To prevent injurious pressure on the rectum, the tube must be lifted up occasionally about half an inch, and allowed to slip back of its own accord. It can be removed, whenever the discharge has been reduced to not more than one or two drachms of clear serum, and this usually happens within the first forty-eight hours. After its removal, the opening left in

* Gardner: *Canada Medical and Surgical Journal*, Jan., 1887.

the wound is closed, by twisting the free ends of the wire suture placed there for this purpose.

After-Treatment.—The subsequent treatment needs the greatest attention. The first care is to establish reaction. This is best done by heat, and by stimulants, such as brandy and whisky given in iced soda-water. Enemata of beef-tea and brandy, or of milk and brandy, will also be of advantage, while artificial heat is kept up. For the vomiting, which comes partly from the anæsthetic and partly from shock, repeated deep inspirations should be tried. They help, by getting the blood rid of the anæsthetic as soon as possible. Chloral may also be given, or small lumps of ice may be swallowed. Sips of very hot water, or a table-spoonful every hour of a mixture containing equal parts of lime-water and of cinnamon-water, may also do good. A hypodermic of morphia will often allay vomiting, and I have seen it yield to small doses of atropia, and also to two grains of pure pepsin given every two hours in a tablespoonful of raw-beef juice. Twenty drops of ether given by the mouth will sometimes relieve it, and so also will a few drops of chloroform confined by a watch-glass over the pit of the stomach. In some cases I have tried, with the best results, the following effervescent mixture, recommended by Chéron:*

R. Potassii bicarb. }	aa gr. xxxij;
Potassii bromidi, }	
Aquæ,	f 3 ij. M.

R. Acidi citrici,	3 j.
Syrupi,	f 3 j.
Aquæ,	f 3 iv. M.

A dessertspoonful of the former is added to a tablespoonful of the latter, and given every hour. For vomiting, especially of the bilious variety, Lawson Tait recommends Mason's pepsin wine, given every ten minutes in drachm doses with a little ice-water.

Flatus is another annoying symptom, which, however, can very generally be dispelled by turning the patient over on

* *Archives de Tocologie*, Février, 1883, p. 122.

her side, and inserting a flexible catheter high up in the rectum. If this fails to relieve it, enemata of turpentine may be tried, or five-drop doses of the tincture of *nux vomica* may be given every two hours. Should the abdomen become painfully bloated, the binder must be loosened and the adhesive straps nicked in several places. The painful tension on the stitches can be relieved, by drawing the knees up and supporting them over a pillow doubled on itself. Should the flatus not yield, and symptoms of obstruction set in, the bowels must be opened at all hazards. Seidlitz powders and Epsom salts are good cathartics for this purpose. When vomiting accompanies obstruction, calomel answers best, because it is not so liable to be rejected.

For the first thirty-six to forty-eight hours after the operation, nothing whatever should be given to the patient excepting cracked ice, sips of hot tea or of barley-water, and an occasional teaspoonful of old whiskey. After that time tablespoonful doses of milk, of beef-tea, of thin oatmeal gruel, or of barley-water can be given every hour or two. The diet may then be cautiously increased, and especially after wind begins to escape from the rectum, the patient being enjoined not to hold it back from motives of delicacy. If the condition of the patient is such as to demand more nourishment, it had better be taken by the rectum. The urine should be drawn off by the nurse, unless the patient can, without much straining, pass it herself into a urinal. Excepting the suppository inserted directly after the operation, no anodyne need be given unless called for by great pain, wakefulness, or restlessness. For opiates, by paralyzing the bowels, favor tympanites, and they should, therefore, be avoided as much as possible. Should the body-heat indicate a temperature of 101° or over, a bladder filled with broken ice, or, what is far better, a rubber ice-cap, should be kept on the head of the patient as long as it feels comfortable and does not chill her. If the temperature does not fall, and peritonitis or other septic symptoms set in, the bowels must be at once moved either by calomel or by a saline cathartic,

aided by enemata of soap-suds and turpentine. Ice should also be applied to the pit of the stomach. Quinia and morphia must then be given in very large doses, preferably by the rectum, together with ten drops of the tincture of digitalis every hour, until the pulse-rate is lessened and the temperature falls.

When five or six days have elapsed, the bowels should be opened; and, as this is a matter of importance, and is occasionally attended with symptoms of obstruction and with a good deal of constitutional disturbance, a few words will not come amiss. If the hardened feces can be softened down and dislodged by enemata, this is perhaps the best plan, clysters of ox-gall and water or of glycerin and water being the most efficient. But, in my experience, enemata have so often failed, that I rarely resort to them in the first instance. If the woman's stomach is not irritable, I prefer to give her an ounce of castor oil. This is disguised in the compound syrup of sarsaparilla or in some other suitable vehicle, as warm milk, and is brought to her without any previous warning, early on the morning. Should it be deemed unwise to try the oil, two Lady Webster pills and two compound cathartic pills can be given at bedtime of the seventh day, or a pill containing three grains of the compound extract of colocynth with one grain of the extract of hyoscyamus may be swallowed every four hours. The compound licorice powder of the German Pharmacopœia, to which has been added potassium bitartrate, also answers well, provided the patient's stomach will bear teaspoonful doses every four hours. Should these remedies fail to act, they must be supplemented by enemata.

Fatal obstruction of the bowels from matting, or from constricting bands of organized lymph, has been frequently reported. Thus far, I have met with two fatal cases, one of which, however, passed out of my hands after the operation. But occasionally I see cases of obstinate constipation, which give me great uneasiness and put me to my wits' ends. In one case, after the failure of other remedies, the obstruction

was overcome by broken doses of calomel combined with sodium bicarbonate, and by the distension of the lower bowel with very large enemata slowly given. Another desperate case yielded to repeated doses of tincture of belladonna. A third case, complicated by obstinate vomiting, was saved by ten grains of calomel given every two hours until the bowels were moved. Seventy grains were thus administered before the desired effect was attained, yet salivation did not occur.

When symptoms of obstruction once present themselves, they are likely to recur. The contents of the bowel should, therefore, be kept fluid, and for this purpose I know nothing better than the German compound licorice powder, given in teaspoonful doses at bedtime.

Suppression of urine sometimes follows ovariotomy, and in cases of diseased kidney is an alarming complication. For this symptom, digitalis and the acetate of potassium should be given. Thornton treats it by baring the arms and packing them in towels, which are kept wet with ice-water.

Tetanus may destroy the life of a patient while convalescing from the operation of ovariotomy. J. M. Bennett reports such a case.* The symptoms first showed themselves on the sixteenth day, and the woman died two days later. Chloral in drachm doses, administered by the bowel in the yolk of an egg, is perhaps the only remedy from which any good can be expected.

Phlegmasia alba dolens of lower extremities may occur. It happened in one of my cases, and was cured by frictions with belladonna and blue ointment and by firm bandaging.

Occasionally, a few days after the operation, without any septic symptoms whatever or without any marked rise in the temperature, the parotid glands grow tender, swell up, and run through a course precisely like mumps, ending in resolution. This complication has been met with so frequently by myself and others, that it cannot be a mere coincidence, but must be due to a reverse sympathy between the ovaries and these glands. It does not appear to increase the risk of the

* *Lancet*, Dec. 3, 1881.

patient, for recovery took place in all the reported cases, of which three occurred in my own practice.* Parotid bubo also may take place after ovariectomy; but this sign of blood-poisoning, being a general one, happens as well after other grave surgical operations and during the course of specific fevers. Yet, from the sympathetic relation between the parotid glands and the sexual organs, it seems to occur more frequently in the septicæmia following ovariectomy.

Acute mania sometimes follows ovariectomy, especially when both ovaries have been removed. The attack is usually temporary, but it sometimes ends in insanity, and even in death, as in one of my own patients. Keith, Thornton, Tait, Bank, Bryant and other leading ovariectomists report analogous cases.†

SURGICAL TREATMENT.

The dressings, being antiseptic, need not, as a rule, be removed until the day following that on which the bowels are moved. Every other stitch may then be removed, and especially all that are loose or are cutting the tissues. The wound is then washed with a 2.5 per cent. solution of carbolic acid, and dressed anew with salicylated or iodoformed cotton. I usually find the first dressing so sweet, that I am able to reapply the unsoiled portion of it for a second dressing. A clean binder is now pinned on, and the woman's clothing changed. Three or four days later all the stitches should be removed, the wound secured by narrow adhesive strips, and dressed as before. For fear of a weak cicatrix and the formation of a hernia at the site of the wound, the patient should not get out of bed until fully two weeks have elapsed, and should for several months wear some kind of close-fitting gored binder or abdominal supportor.

If, before the week is over, the dressings become soiled or give out a bad odor, they should be at once renewed. They should also be removed whenever a high temperature, with-

* Wm. Goodell, *Transactions of American Gynecological Society*, 1885; also Stephen Paget, *Lancet*, 1886, pp. 87 and 733.

† *The British Medical Journal*, March, 21, 1885, p. 597, and March 22, 1884, p. 563; also *Medical and Surgical Reporter*, May 29, 1886, p. 692.

out being accompanied by tympanites, leads to the suspicion of cutaneous abscesses.

The Accidents and Complications of Ovariectomy.—When, by the breaking up of adhesions to it, the liver is wounded, the bleeding surface can usually be stanchèd, as Kœberle has shown, by the ferric subsulphate applied to the raw surface by the finger. If this fails, the actual cautery at a dull heat should be used.

If, unfortunately, an adherent portion of the bowel is torn open, the wound should be carefully closed with very fine silk by the continuous suture. The sutured portion is then fastened to the lower angle of the abdominal wound, as a safeguard in case of the subsequent formation of stercoral fistula.* Should the intestine be injured to any extent, the wound must be closed by the Czerny-Lembert suture, which consists of two sets of fine silk sutures, the first set uniting the mucous edges of the wound by the continuous suture, the other set uniting one serous coat to the other at a line about one quarter of an inch distant from the wound, either by interrupted sutures, or by the continuous suture. An ordinary cambric needle with fine sewing-silk will answer admirably for this purpose. The whole number of sutures required must be introduced before any are tightened. By this suture, the serous surfaces are turned in toward the lumen of the viscus, and are brought into close contact. Of course, when the outer series of sutures are applied the inner, or Czerny, row, including the mucous membrane, is entirely covered in.

This suture is employed in closing intestinal wounds, and is particularly valuable in bringing the two serous surfaces of the wound in close apposition, which is necessary for union. The inner row of sutures, advised by Czerny, affords additional security. In small wounds one continuous suture, carried through all the coats but the mucous, will suffice. A mere puncture can be closed by hooking it up and surrounding it by a single fine ligature.

* "Discussion on a Paper by Garrigues," *Am. Gynæcol. Soc., Trans.*, 1881.

Wounds of the bladder have frequently happened, but they are by no means necessarily fatal.* These accidents are liable to occur, when the bladder, being adherent to the cyst and carried upward by it, lies directly under the line of incision, or the bladder may be torn open while adhesions to it are being severed. The wound should at once be grasped by a pressure-forceps, the bladder emptied by the catheter, and the operation proceeded with. When the operation has been completed, the wound in the bladder is attended to, and in one of the following ways: Either the vesical wound is brought up within the lips of the abdominal incision, and is closed by being included in the abdominal stitches, or it is closed by the continuous or Glover's suture, without including the mucous membrane in the stitches. A self-retaining catheter, such as the Skene-Goodman, must then be kept in the bladder for at least a week.

One of the ureters will sometimes be torn across, while pelvic adhesions are being broken up. This accident is most likely to happen, during the enucleation of a cyst growing downward, from its being enveloped in the folds of the broad-ligament. It is almost always fatal, and is usually not discovered during the life of the patient, and, I am disposed to think, not often discovered after her death. Sometimes, however, urine will ooze out of the abdominal wound, and in rare cases the patient has recovered with a urinary fistula. In such a case Simon† successfully removed the corresponding kidney; Nussbaum‡ constructed an artificial ureter leading from the fistula to the bladder; and Tauffer§ inserted the upper end of the divided ureter into the bladder by an artificial opening. It, however, failed to unite, and he later made an artificial ureter.

* Eustache, *Archives de Tocologie*, April and May, 1880, pp. 193, 277; *Boston Med. and Surg. Journal*, Feb. 16, 1882, p. 153; *British Med. Journ.*, Jan. 28, 1882, p. 115; *Am. Journ. Med. Sci.*, Jan., 1883, p. 123.

† *Annales de Gynécologie*, June, 1877.

‡ *Edinburgh Medical Journal*, July, 1876, p. 1.

§ *Archives de Tocologie*, April, 1880, p. 201.

When an umbilical or a ventral hernia of moderate size is present at the time of the operation, efforts should be made for its radical cure. This is done by cutting out the thinned-out sac by two elliptic incisions meeting below and above, and by bringing together the thick edges of the abdominal wall in the final closure of the wound.

In cases of ascites complicating ovariectomy, the ascitic fluid should not be wholly removed, until the cyst has been cut off and the wound is ready to be closed. By this means, any blood oozing from broken adhesions, or any fluid escaping from the cyst into the abdominal cavity, being diluted, is less likely to irritate the peritoneum, the cavity of which can also be more readily cleansed.

When a patient seems in danger of dying on the table, from shock or from exhaustion, the anæsthetic should be withheld, while hypodermic injections of ether and enemata of brandy are given. Warmth should also be applied to the body by bottles of hot water, or, what is better, by rubber bags of hot water. Theoretically, atropia administered subcutaneously would be the proper remedy, but I have not yet tested it. In all severe cases of ovariectomy, especially if the operation be prolonged, the woman should not be kept profoundly under the influence of the anæsthetic for any length of time, but should be allowed from time to time to come to, at least enough to make her flinch or move about. This caution should especially be observed in very feeble patients, and in those with very large cysts. Transfusion will sometimes be of benefit. The Transfusion Solution of Mikulicz is approved by many surgeons. It consists of eight grains of sodium carbonate and one drachm and a half of sodium chloride, dissolved in one pint of warm distilled water. Twelve ounces of this may be slowly transfused into the radial artery or the radial vein.

THE REMOVAL OF BOTH OVARIES.

Whenever both ovaries are diseased there can be no question about their extirpation. But when only one has under-

gone cystic or other degeneration, the question of the removal of the sound one may come up. There always is a tendency to the subsequent degeneration of the sound ovary, after the diseased one has been removed. More especially is this tendency observed in sterile women, and in those with malignant affections of the ovary. Many women, therefore, whose lives should have been imperilled but once, have been compelled to face the dangers of a second operation. In view of these facts, it seems to me wise to remove the sound ovary, in all cases of sterility, in every case of malignant degeneration of one ovary, in all cases of colloid cyst, a degeneration which in my experience is very likely to attack the sound ovary, and in all women who have either passed the climacteric or are approaching it, —provided the removal is not attended with great additional risk. Double extirpation should also be performed, whenever the womb contains a fibroid tumor, or whenever it seems desirable to hasten on the climacteric. In these convictions I am further strengthened, by the disappointment often expressed to me by my patients, that one ovary had been left behind, and by their great fear afterward lest the remaining organ should also become diseased. On the other hand, in women who are in the prime of their menstrual life, the sound ovary should be left untouched, unless there exist grave reasons for its removal.

The Return of Cysts.—Benign cysts once removed never return; but, after the removal of a malignant cyst, the disease may return at the site of the pedicle and develop into another cyst.* This form of return I have seen twice. The disease, however, usually attacks the remaining ovary; or, if both ovaries have been removed, the liver or some other vital organ becomes secondarily infected. Yet, there is no question that the removal of malignant cysts is followed by a marked improvement in the health of the woman, and in a long reprieve from death.

* *Société de Chirurgie*, Séances Dec. 9 and 16, 1885.

LESSON XXXIV.

VAGINAL OVARIOTOMY.

HITHERTO we have discussed the removal of an ovarian cyst through the walls of the abdomen; but sometimes, when the cyst grows downward—beneath the broad ligament instead of above it—or when a small cyst, especially if purulent or if dermoid, is lodged in Douglas's pouch, the safer, and, therefore the better plan, may be to remove it by a vaginal incision. The success which has attended the few cases on record, leads me to think that, in selected cases, ovarian cysts will in the future be more frequently extirpated in this way.

As a case in point, I bring before you to-day a girl whom you have seen before. She is an unmarried woman aged twenty-two, and was well until about two years ago, when she took a long journey by rail, and, through modesty, allowed her bladder to become over-distended. From that day she began to have womb and bladder troubles, which steadily increased in severity. The latter finally became so exacting, that she had to give up a situation as child's nurse, and to depend for support on the charity of some benevolent ladies. On the 15th of last February she was brought to my office by a medical friend, who is the medical consultant of the Home where she was lodging. He told me, that she had great difficulty in getting a movement of the bowels, and was worn out by a very frequent and very urgent desire to empty the bladder. The act of voiding her urine was of itself a painful and a difficult one; yet it would be repeated sometimes every hour at night, and every half-hour when she was on her feet—as, for instance, in ironing. During her last two catamenial periods she was unable to pass her water,

and had to call in her physician to draw it off. She was pale and haggard from her sufferings, and very querulous.

I found the cervix uteri hugging the symphysis pubis a little to the left, and behind it a dense and immovable tumor, which shelved down into Douglas's pouch. The fundus of the womb lay above the pubes on the right side, but it was so immovable, and projected so far forward, that I at first mistook it for an outgrowth of a uterine fibroid. The sound, however, rectified the mistake, and gave a measurement of *plus* four inches. The girl, being very nervous, kept her abdominal muscles so tense, that no information could be gained from supra-pubic palpation. But, after repeated examinations, an obscure sense of fluctuation was elicited *per vaginam*.

Being admitted into the Hospital of the University of Pennsylvania, she was, on February 21st, etherized and brought before you. Nothing more was gained from this examination, than that the tumor could not be dislodged from the pelvic cavity, and that, by supra-pubic palpation, it could be outlined behind the highly situated fundus of the womb. Feeling now very sure that it contained fluid, I aspirated it, *per vaginam*, and withdrew one large tumblerful and a half of an odorless and straw-colored fluid. The tumor now so wholly collapsed, that not a trace of it could be felt from above or from below. The womb regained its proper position, became movable, and shrank back to a measurement of *minus* three inches. My diagnosis leaned to a unilocular ovarian cyst, with firm uterine and pelvic adhesions; but, to put matters beyond doubt, I submitted a specimen of the fluid to my colleague, Dr. James Tyson, from whom, in matters of this kind, there is no appeal. The following is the report that he was kind enough to make for me:

"A grumous, yellow fluid, neutral in reaction, with a specific gravity of 1.113, highly albuminous, and depositing copiously a sediment made up largely of crystalline particles, which proved on microscopic examination to be cholesterine plates. In addition were numerous granule cells, and large numbers of the so-called 'ovarian cell;' also numerous bacteria. The above are the usual characters of ovarian fluid, and it is believed to be ovarian."

After this operation my patient lost all her tormenting pressure-symptoms. She could now hold her water, and pass it without distress. For three days she felt well. Then she began to complain, first of a supra-pubic pain, and afterwards of her old troubles. I found the cyst rapidly refilling. By March 3d its upper surface could be easily felt, reaching very nearly up to the navel; and on that day I withdrew by the aspirator, very nearly a quart of turbid fluid containing broken-down blood, and giving off a slight odor of sulphureted hydrogen. Again the tumor collapsed wholly beyond recognition. This operation relieved her bladder troubles, but it was followed by marked symptoms of blood-poisoning, such as fever, creeping chills, complete loss of appetite, constant nausea, pallor alternating with hectic flushes, sweating, a pulse always over 100, and a body heat ranging from 99.5° to 101.5° . There were also stabs of pain in the right pelvic region, but no tympanites. Her urine had now to be drawn off. The cyst began rapidly to fill, and its removal was clearly indicated; but she was timid, and her friends, whom she wished to consult, lived in a neighboring State. At my visit on the evening of Tuesday, March 13th, I found her pulse over 120, her temperature up to 102.5° , her skin and conjunctivæ with an icteric tint, and her lips studded with a crop of vesicles. She was incessantly vomiting, and fortunately so frightened that I wrung from her the permission to remove the cyst.

On the next day, at noon, I proceeded to operate, with the aid of Drs. C. T. Hunter, W. S. Stewart, B. F. Baer, H. R. Wharton, G. S. Hull, and T. Lancaster. My patient was put in the lithotomy position—the one which I prefer to any other in the operation for vesico-vaginal fistulæ, and in many vaginal operations—and another careful examination made. The fundus of the womb lay now to the left and well above the symphysis. The cervix, like a mere nipple, pouted out from the tumor somewhat low down in the vagina, and to the right of its median line. The sound gave a measurement of five inches. By forcing my finger high up between the

tumor and the pubes, I found that the supra-vaginal portion of the cervix was small, round, and stem-like. It gave precisely the same feeling, as in prolapse of the womb with hypertrophic elongation of the supra-vaginal portion of its cervix.

Finding it impossible to push up the cyst into the abdominal cavity, I determined to attempt its removal per vaginam, and, if frustrated, to stitch the lips of an opening made in it to the edges of the vaginal incision. Accordingly, two duck-bill specula being introduced, the space between them was divided by two strokes of Küchenmeister's scissors. As soon as Douglas's pouch was opened, there gushed out unexpectedly several ounces of very fetid pus. Numerous adhesions now presented themselves. All within reach of two fingers were broken, and the cyst was then caught by a volsella forceps, and emptied by aspiration. The fluid first drawn off, about two quarts in amount, consisted of a dirty, grumous pus, and the gas pumped out of the receiving bottle was so abominably offensive as fairly to turn my stomach. The trocar-needle then entered another cyst, which gave about an ounce of clear, syrupy fluid. A spray of chloralum was kept playing upon the parts. I washed my hands in a stronger solution, and proceeded to draw down the cyst, and break up other adhesions, which successively came within reach. What with these adhesions, and with the small working space which the vagina of a virgin affords, every step of the cyst's withdrawal was attended with difficulty. But this was finally attained by the repeated introduction of two volsella forceps, the one over the other, Dr. Hunter and I making alternate traction. The cyst was found to be without a stalk, and closely attached to the womb, which now presented itself at the opening, but no coil of intestines was felt during the operation. I at first thought of attempting the enucleation of the cyst, but was afraid that, from retraction of the parts involved, some bleeding vessel might get beyond reach. So the left broad ligament was transfixed by a long-handled perineum-needle carrying a double ligature, and each half

tied. But, in order to get a button of tissue sufficiently large to prevent the ligature from slipping off, a portion of the cyst had to be cut off, leaving a circular opening in it as large as a silver half-dollar. Free drainage from the pelvic abscess was secured, by bringing all the ligatures out of the wound.

The cyst contained a few smaller ones, and, in addition, several calcareous plates. Decomposition had been limited to the mother-cyst, for the contents of the small ones were clear, glairy, and sweet.

My patient lay for several days in rather a critical condition, her only encouraging symptom being unmitigated crossness. No peritonitis kindled up, but septic symptoms still held on, and with them a copious and very offensive discharge from the vagina. She had no control over her bladder, and threw up all her food and medicine. Rectal suppositories of quinia were therefore resorted to, and enemata of beef-essence and whiskey. As mere vaginal injections did not sweeten her person, and as her body-heat and pulse kept up, I began, on the sixth day, to wash out Douglas's pouch twice daily with a solution of two drachms of the liquor sodæ chlorinatæ to a quart of water. This was thrown into the peritoneal cavity through a flexible male catheter. Every irrigation brought away a very grumous and offensive matter. The first one gave her much relief, and lowered her pulse and temperature. From that day she began to mend. These irrigations were kept up for ten successive days. Then they began to give her a good deal of pain in the wound, and were accordingly discontinued.

Her convalescence was steady, but by no means speedy. Some time elapsed before her appetite came back, and then, from a hysterical dysphagia, she could not swallow solid food. Either from the seton-like action of the ligatures, or from the walls of the abscess, a free and offensive discharge kept on. It was not until April 1st that she was able to sit up in bed, and not until two weeks after, that she could be helped into a chair. The ligatures, however, still held on; and she

was up and about while they were hanging out of the vagina. Their presence annoyed her very much, and she grew morbid about them. On April 26th, she worked herself up to a pitch of desperation, and, giving the ligatures a violent tug, tore them off. A momentary pang of pain was followed by the escape of about four ounces of blood. I saw her shortly afterwards, and at once put her to bed. Pelvic soreness lasted for several hours, but nothing worse came of this reckless act. She fared better than she deserved, and by next week she will be well enough to go home.

As far as I can discover, my case makes the eighth of the removal of an ovarian cyst per vaginam. All of them took place in this country. The first published case was that of Dr. T. Gaillard Thomas,* who met with it in 1870. The cyst "was equal in size to a large orange, . . . and could readily be pushed out of the pelvic cavity." It contained from six to eight ounces of bile-like fluid, was without adhesions, and, after being emptied, "passed without difficulty into the vagina." It had a pedicle which was transfixed by a needle armed with a double ligature, and tied on each side. Dr. Thomas then cut off the cyst, together with the free ends of the ligature, close to the knot, and returned the stalk into the abdominal cavity. One suture sufficed to close up the vaginal wound. The operation proved an easy one, lasting but thirty-five minutes. Owing to gross imprudence on the part of the woman, her convalescence was delayed by an attack of parametritis.

The second case is reported by Dr. R. Davis, of Wilkesbarre, Pa.† From the size of the cyst and from the extent of the adhesions, it deserves more than a mere passing notice. On May 29, 1872, Dr. Davis was called to see Mrs. J. T., a multipara, aged 29, and found her abdomen distended by two tumors of very nearly equal size. One of them proved to be the womb advanced to about the seventh month of

* *Diseases of Women*, 1874, p. 733.

† *Transactions of the Medical Society of Pennsylvania*, 1874, Vol. X., Part I., p. 22.

pregnancy; the other, an ovarian cyst extending upward several inches above the navel, and so low down as to fill up the pelvic cavity. On August 7th labor set in, with the os uteri almost beyond reach. Unsuccessful efforts having been made to lift the tumor out of the pelvis, the cyst was tapped per vaginam. It collapsed, the womb descended, and a still-child, presenting by the breech, was born without difficulty.

Summoned again on September 15, to see his patient, Dr. Davis found the tumor had regained its original size and site. It now bulged down so low in the vagina as to be within easy reach, and presented a surface capable of a large incision. The previous use of the trocar had shown that the cyst was unilocular, and probably without adhesions. For these reasons it was decided to attempt its removal per vaginam. The operation, which was performed three days later, is described as follows:

“The patient having been placed upon the table and etherized, was secured in the position of lithotomy. Two Sims' specula were now introduced into the vagina, and held by assistants; one making traction anteriorly, and the other posteriorly. In this manner the posterior wall of the vagina, covering the tumor, was brought nicely into view. The vagina was now caught with a tenaculum, drawn well down, and incised through the fornix, to the extent of about four inches. After the hemorrhage, which persisted for some time, had ceased, the remaining dissection was made, the peritoneum being divided upon a bent grooved director. The shining cyst-wall was thus exposed. To my dismay, pretty firm pelvic adhesions were found to exist, and I confess to having had many misgivings at this point, as to the success of my undertaking. I proceeded, however, to sever the adhesions with my finger of far as that could be done; but they extended beyond the reach of the finger. The specula were now removed, and with the whole hand introduced into the vagina and through the wound, all the adhesions were broken up, first in the pelvis, then in the abdominal cavity between the peritoneum and the tumor anteriorly, and between the tumor and omentum; the hand being carried for that purpose to a point two inches above the umbilicus. The specula were now reinserted; the cyst was secured by a tenaculum and tapped with a curved trocar and canula. As the fluid all escaped, I had the great satisfaction of seeing the cyst, almost without traction, come down into the vagina and into my hand. The pedicle, which was long, was secured by a double ligature; the stump was returned into the peritoneal cavity, and one end of each ligature was left uncut and brought out at the lower portion of the incision. The cul-de-sac of Douglas was carefully sponged out, and two stitches in the

upper portion of the incision completed the operation; the lower portion being left open for drainage. The patient rallied well. Indeed, the patient suffered less from shock in this case than in any other case of ovariectomy I ever witnessed. At no time, after the first evening, did the pulse rise above a hundred. She recovered without a bad symptom, and, in four weeks after the operation, she called on me at my office perfectly well. One point in the history of the case, after the operation, deserves mention as bearing upon the question of vaginal drainage in ovariectomy. For four days after the operation there was an abundant watery, dark-colored, and very fetid discharge per vaginam, sufficient to saturate completely three or four times a day a folded sheet placed under her. The question arises, had this discharge had no outlet, would it not have produced either peritonitis or septicæmia, or both? The tumor was composed of a single cyst of the right ovary, and weighed with its contents, about nine pounds."

The third case is described by Dr. J. T. Gilmore, of Mobile.* The cyst was movable and not larger than a small orange. It had a pedicle one inch and a half in length, which was tied and the cyst cut off. The vaginal opening was closed by three silver sutures, one of them being so passed through the pedicle as to keep the knot outside of the peritoneal cavity. Dr. Gilmore remarks that he "found the whole procedure extremely simple and easy. The whole operation was executed without a change of posture (Sims's position), and consumed only about ten minutes." The body-heat never went above 100, and all medical attendance was discontinued after the twenty-fifth day.

The fourth case occurred in the practice of Dr. Robert Battey.† The tumor turned out to be a pedunculated dermoid cyst of the left ovary, as large as a small orange. It contained a ball of hair, and a bone-plate half an inch in length and a quarter of an inch in thickness. A ligature was thrown around the pedicle, and the ends were brought out. A loop of intestines and the right ovary followed the tumor through the incision. They were returned; no bad symptom occurred, and the woman soon recovered.

Dr. Clifton E. Wing reports the fifth case.‡ Defecation was

* *New Orleans Medical and Surgical Journal*, November, 1873, p. 341.

† *Atlanta Medical and Surgical Journal*, 1874, p. 146.

‡ *Boston Medical and Surgical Journal*, November 2, 1876, p. 516.

impeded by a small, elastic, and immovable tumor in Douglas's pouch. On February 10, 1876, an aspirator-needle withdrew two drachms of dark, bloody fluid, diagnosticated to be the result of "an old hemorrhagic effusion." No bad results followed this operation. On March 30 the hollow needle was again plunged in, and several ounces of the same kind of fluid were pumped out. All the ordinary symptoms of a mild septicæmia followed this aspiration, and she began to lose strength and appetite. On April 19 an exploring needle passed in per vaginam permitted the escape of a few drops of an "exceedingly offensive matter." It was now plain that the fluid, "whether it came from an old hematocele, or from a hemorrhagic ovarian cyst," ought to be removed at once. After opening Douglas's pouch, the tumor was found to be an ovarian cyst as large as an orange. It was bound down by loose adhesions, which easily gave way before the finger. Its bulk being reduced by twisting, it was brought out into the vagina. It had no pedicle proper, but was readily enucleated by one finger. Some bleeding took place. The broad ligament slipped back into the abdominal cavity, and a coil of small intestines appeared at the opening. It was, therefore, closed by three silk sutures. These sufficed to prevent hernia, but left room enough to introduce a catheter. Fetid fluid in the cul-de-sac gave rise to septic symptoms, but, after a daily irrigation through a double catheter, all these vanished, and the patient made a good recovery.

Dr. W. H. Baker also publishes a case.* He aspirated per vaginam a small dermoid cyst. The sac suppurating, and hectic fever setting in, he successfully removed the tumor through a vaginal incision.

While I was reading a paper on this subject in Boston, that distinguished ovariotomist, the late Dr. Washington L. Atlee, kindly furnished me with the following notes of another case of vaginal ovariotomy. They show that his operation antedates all others, but, as he never published it, I put it last.

"February 7, 1857, in consultation with Dr. William Corson, I visited

* *New York Medical Journal and Obstetrical Review*, March, 1882.

Mrs. H. S., of Swede's Forge, Montgomery county, Pa. She was forty-seven years old, and had not passed the climacteric period of life. Her abdomen had been considerably enlarged, but was then smaller in consequence of vaginal discharges, which had occurred two or three weeks before I saw her. The fluid which escaped resembled gum arabic water, and had a somewhat offensive odor.

"Notwithstanding she was a woman of spare habit, she had rapidly lost weight. The hypogastric region was enlarged and occupied by a tumor of less resistance than a fibroid, feeling more like a dense multilocular tumor. It was painful to pressure and scarcely movable. The pelvis was wholly occupied by a large and not very tense cyst, covered by the anterior wall of the vagina. On separating the vulva the mass could be seen. The cul-de-sac of the vagina was high up above the brim of the pelvis, and the vaginal canal could be traced going up back of the tumor. I passed my hand into the vagina, but the os uteri was entirely beyond reach. This examination gave considerable pain, and the hand came away stained with blood. The bladder was elevated into the left inguinal region, as ascertained by the sound. This accounted for an occasional difficulty in making water.

"Here there was a tumor occupying the hypogastric and pelvic regions, situated anteriorly to the uterus, forcing this organ and the bladder into the abdominal cavity, and stretching the front wall of the vagina over it. The case, however, was so unique that I could not make out a clear diagnosis. It was decided, however, to open the pelvic cyst through the wall of the vagina. This was done, and a considerable quantity of purulent-like fluid was removed. As the patient was suffering very much, further proceedings were postponed.

"March 13, 1857, I visited her with Dr. Corson again. He had, in the meantime, enlarged the original incision. The hypogastric tumor had diminished in size, and the soreness had also decreased. The discharge had continued. The tumor in the pelvis had become more dense. It was found to be adherent to the parts around it, but most of the adhesions were easily broken up with the finger, while several bands had to be severed by the probe-pointed bistoury. I thus succeeded in detaching the lower portions of the tumor as far as the finger could reach. To accomplish this I had to enlarge the incision in the vaginal coat. As the case was a novel one, and the ground untrodden, it was thought best to suspend for the present further attempts, with the hope that nature itself might throw off the tumor. Should that not be the case, it was determined to bring down the mass by force, break up the adhesions, and enucleate the whole of it from its bed, and remove it.

"March 25, 1857, we saw the patient again. Her health and strength had improved, but very little change had occurred in the tumor. Before proceeding to the final operation, I made another careful examination. By means of a catheter in the bladder, and a finger in the rectum, I satisfied myself that neither of these organs complicated the case.

"The abdomen being well supported by Dr. Corson, I passed my fingers over the anterior portion of the detached tumor until the point of adhesions

was reached, and then with the other hand introduced the crotchet-shaped hook, and firmly planted it in that portion of the mass. By means of the hook, I was able to drag down the tumor, and, at the same time, by the fingers, to detach the adhesions, as these were brought within reach. In this way I finally succeeded in enucleating the entire front portion of the tumor, and rolling it entirely out of the vagina. There still remained a large part of the tumor adherent posteriorly, and as the delivered mass interfered with the further progress of the operation, the latter was excised. The remainder of the tumor was equally adherent, and was managed in the same way, and the whole of it was finally removed.

"On examinig the pelvis afterwards, the shreddy bed of the tumor alone remained. The small uterus could scarcely be recognized among the loose tissue, and still occupied an elevated position. Very little hemorrhage occurred, and although no anesthetic was used, the suffering was not intense. The tumor was very much mutilated by the efforts at removal, and proved to be much larger than had been suspected before the operation. It was ovarian and multilocular. September 30, 1858, Dr. Corson called to see me, and reported that Mrs. S. was entirely restored to health, and that menstruation was more regular than ever before. April 4, 1875, I incidentally met the patient in Philadelphia at her son's residence. She was the picture of health, and had never been sick since the operation."

As bearing on the subject, I cannot refrain from referring to a very curious and perhaps unique case of the successful removal of an ovarian cyst *per rectum*. It happened in the practice of Mr. A. W. Stocks, surgeon to the Salford Royal Hospital,* who reports it as follows:

"E. J., aged 45, slightly built, married, had three children; she was last confined about twenty-two years ago. She menstruated regularly up to two years ago, irregularly till eight months ago, and not at all since. About eleven years back, a tumor about the size of a walnut appeared at the anus when getting out of bed, becoming larger on exertion. It was accompanied by faintness and uneasiness, especially when sitting down. She was always costive, and could neither micturate nor defecate unless she replaced the tumor manually. She had lately experienced difficulty in coition. The lump had increased in size during the last ten months, and had come down always while at work, producing a great deal of pain in the hypogastrium, more particularly when she was in the upright position. She felt best when lying down. The prolapse was large, being about the size of a small coconut.

"*March 15, 1872.* When she was placed upon the operating-table, and under the influence of chloroform, for the purpose of having the simple prolapsus ani, as it was supposed to be, relieved by operation, defecation took place, the contents of the bowel being expelled in such a peculiar

* *British Medical Journal*, October 16, 1875, p. 487.

manner as to lead to the further and more precise examination of the tumor. It was then discovered that the orifice of the bowel, instead of being at the the most dependent part, was on the posterior aspect, and about half way between the edge of the anus and the lowest part of the prolapse. On introducing the finger into the rectum, a large mass was found to occupy the anterior fold of the prolapsed bowel, of globular shape, and capable of being encircled easily at its base. Per vaginam, the cervix uteri was found tilted forward and to the right side. The uterine sound could be passed only three-quarters of an inch, and a finger passed into the rectum could be easily approximated to the one in the vagina over the tumor, clearly showing an absence of continuity between the uterus above and the mass below. Moreover, on rubbing the tips of the fingers together, a hardened cord could be felt slipping between them. The conclusion, therefore, at once arrived at was, that this cord was the Fallopian tube, and that the tumor was a small ovarian cyst, which had fallen through Douglas's pouch, become entangled with the prolapsed rectum, and protruded through the anus, dragging the uterus itself out of its normal position. It was evident, that to give permanent relief, it was necessary that this tumor should be removed. Accordingly, an incision was made in the anterior aspect of the prolapse parallel to the axis of the bowel, and, after breaking down some slight adhesions posteriorly, a small ovarian cyst was easily turned out. The pedicle was divided, after being secured by a strong hempen ligature, the end of which was left hanging out of the wound, and the wound was drawn together by an interrupted suture. There was considerable hemorrhage, and the flaccid bowel was left outside the anus.

"*April 23.* The protruded portion of the bowel was about the size of a walnut. Defecation was fairly under her control, and she could draw the prolapse back without manual assistance. The tumor was a unilocular ovarian cyst, and contained about five and one-half ounces of brown, slightly viscid fluid. The ovary and fimbriated Fallopian tube were attached to it."

Now let us analyze these cases: Dr. Wing's case, Dr. Baker's, and that of the girl before you, show that the removal of the fluid of ovarian cysts, by the aspirator, is by no means wholly without danger. Notwithstanding the small size of the hollow needle employed, and the precautions taken to avoid the introduction of air, this simple operation was followed in the three cases by putrefactive changes within the cyst, and in my own case, beside, by an outside lodgment of pus. Two other examples of this kind, both fatal, are furnished by Dr. P. F. Mundé in his unrivaled "*Report on the Progress of Gynecology during the year 1875.*"* In one, septi-

* *American Journal of Obstetrics*, April, 1876, p. 146.

cæmia was induced merely by the puncture of the cyst with the fine nozzle of a hypodermic syringe, and by the withdrawal of a few minims of fluid. In the other, one of a polycyst occurring in the practice of the reporter, peritonitis and septicæmia were set up after the use of a fine aspirator-needle. In a letter, Dr. Mundé kindly gave me the history of a sixth case, which occurred in the practice of one of his friends. A single aspiration was followed by inflammation of the cyst, and by the generation of gas in its cavity. The woman died with symptoms of rupture of the cyst. No autopsy was allowed. Such unfortunate accidents should warn us never to tap a cyst, unless we are ready to perform ovariectomy within twenty-four hours.

The success attending the three cases of suppurating cyst, shows also that ovariectomists are undoubtedly right, in recommending the removal of an ovarian cyst, even after grave symptoms of peritonitis or of septicæmia have set in.

It also confirms the value of cleansing out the peritoneal cavity by irrigation. The profession at large have hitherto had too great a respect for this serous membrane—a respect greatly enhanced in Philadelphia by the unfortunate experience of one of my colleagues. In a case of extra-uterine (ventral) fetation at term, he had safely delivered the woman by means of a vaginal incision. For several days his patient did so well as to give every promise of a speedy recovery. But the discharges becoming offensive, a weak solution of potassium permanganate was thrown up the vagina. Intense pain was at once complained of, general peritonitis set in, and the woman, a few hours later, died in a state of collapse. The knowledge of this fact gave me some misgivings, for this was my first case of intra-peritoneal injections; nor were they allayed by the ominous shake of my colleague's head. But the result far exceeded my expectations. Every injection brought away putrid matter, and from the very first one my patient began to mend. Nor need the fear, that air may be carried into the peritoneal cavity, deter one from resorting to these injections. Pure air must surely be less hurtful than

the fetid gas generated by putrefactive changes. And so I found it in my case, for the syringe was an imperfect one, and bubbles of air passed freely into the abdominal cavity. Besides, the experiments of Frédéricq* prove that unfiltered air can with impunity be projected for hours, upon the peritoneum of such warm-blooded animals as guinea-pigs and rabbits.

Another lesson taught by my own case and that of Dr. Davis's, is the great need for drainage in some cases of ovariectomy. In Dr. Davis's case, there came away for four days after the operation, "an abundant, watery, dark-colored and very offensive discharge, per vaginam, sufficient to saturate completely three or four times a day a folded sheet placed under her." And he pertinently asks: "Had this discharge had no outlet, would it not have produced either peritonitis or septicæmia, or both?" My case did not yield so great a discharge, but what came away was abundant enough to soil several napkins daily, and putrid enough to poison the air of a large ward. When, however, infection is guarded against by the spray, the exudations do not ordinarily decompose, and consequently do not often give rise to septic phenomena.

In the treatment of the stalk, after vaginal ovariectomy, the ordinary clamp is, of course, out of the question; there is no room for it. A special one for this purpose might be constructed, but its utility would be questionable. I should be loth to trust to anything short of the ligature. Enucleation, or even the use of the hot or the cold wire, might be followed by hemorrhage, and after the broad ligament springs back out of view, the bleeding point could not be secured unless the stalk were a long one. Had there not been in my case a lodgment of pus in Douglas's pouch, I should have used the gut ligature, and, after cutting it off close to the knot, have closed up the vaginal opening.

The scope of vaginal ovariectomy must necessarily be limited. Its performance is beset with too many difficulties to make it

* *London Medical Record*, February 15, 1877, from *Annales et Bulletin de la Société de Médecine de Gand*, November, 1876.

a rival to the ordinary operation. But there are certain conditions, in which I am sure that it can be resorted to with greater advantage—when, for instance, a small dermoid cyst lodges in Douglas's pouch, or a small purulent ovarian cyst bulges down into the pelvic cavity, and is firmly attached to it. If the removal of the cyst through the vaginal incision prove impracticable, and the operator be driven to laparotomy, then, nothing more will have been done, than the preliminary establishment of a probably needful drainage opening.

Thus far there have been reported no fatal cases from this mode of removing an ovarian cyst. And, indeed, it stands to reason that in purulent cysts strongly adherent to Douglas's pouch, the risk should be lessened; for fewer important structures are aggrieved, the chance of infection is not so great, and good drainage must, *perforce*, be established by the very site of the incision.

LESSON XXXV.

HYSTERECTOMY.

THE removal of the womb itself is occasionally demanded. This operation is termed *hysterectomy*. The need for it will arise in cases of malignant growths, or of fibro-cystic tumors of the womb, or in cases of rapidly growing or of otherwise hurtful uterine growths, in which the ovaries can not be safely removed.

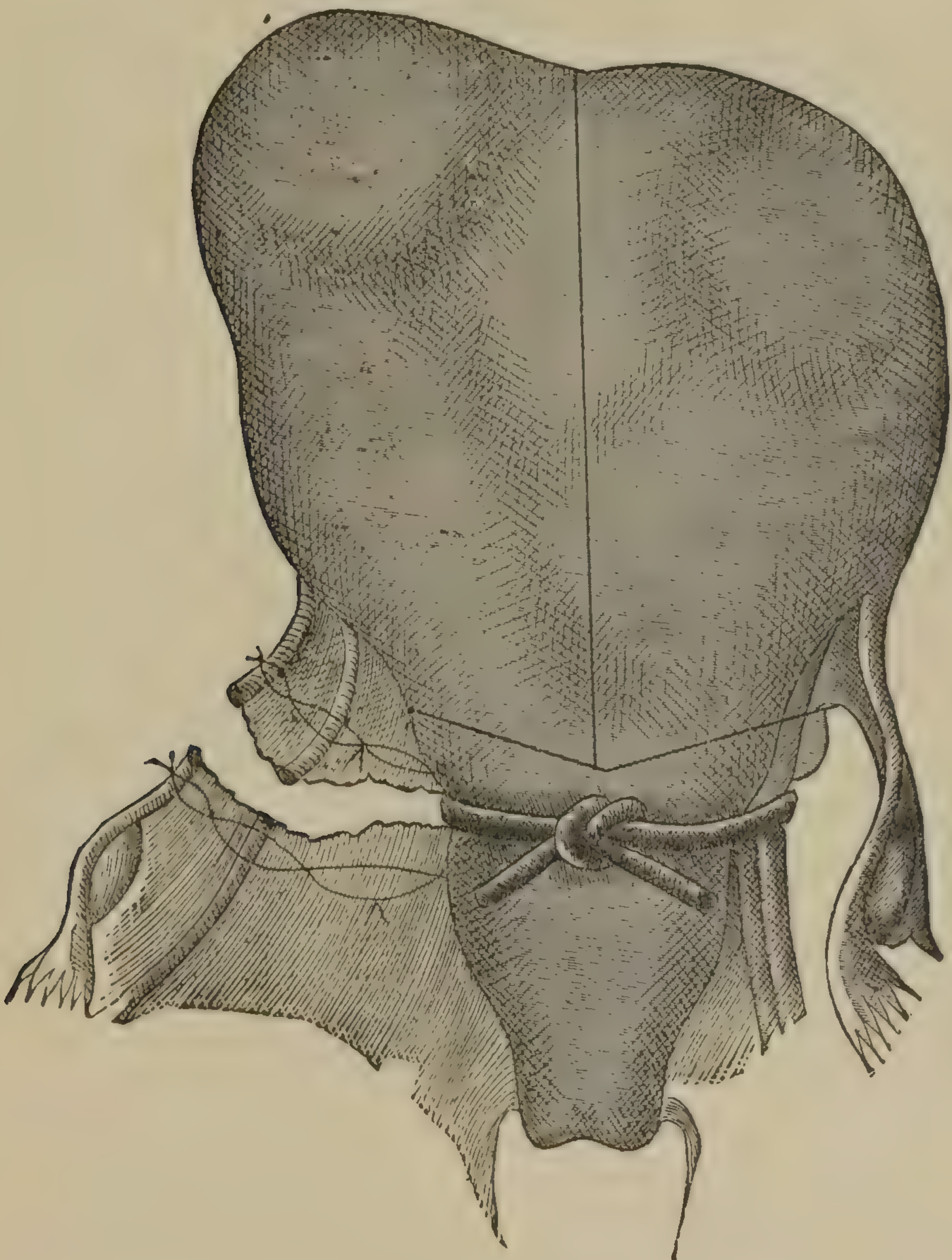
The incision is made precisely as in ovariectomy, but it will have to be made much longer, as the uterine tumors, being generally solid, need to be turned out whole. Then again, the adhesions are far more vascular than those of an ovarian cyst, and far more working room is, therefore, needed.

One great difficulty with regard to this operation is, that no two cases of uterine tumor are alike, and that each case, having to be treated on its own merits, requires prompt decision on the part of the operator. Other difficulties in the way, are the excessively short and vascular adhesions, the displacement of the bladder and the ovaries, and the frequent absence of anything like a stalk or pedicle. Further, the treatment of the pedicle is yet a moot question.

In ovariectomy there is but one decision with regard to the treatment of the pedicle. This must be intra-peritoneal—that is to say, the pedicle is tied, cut, and dropped into the peritoneal cavity. But, in hysterectomy, the extra-peritoneal treatment of the pedicle is recommended by the majority of operators—that is to say, the pedicle, or cervix, is brought outside of the wound and clamped there. This is the practice of Keith, Thornton, Bantock and Tait, who are very successful operators. German operators, on the other hand, and with excellent results, first apply an elastic ligature temporarily

around the cervix, which is next cut off by a wedge-shaped incision. They then sew the two flaps together by deep and superficial stitches, and drop the stump back into the peritoneal cavity. In either mode of treating the pedicle, whenever adhesions are numerous, drainage is generally resorted to. Some operators insert a glass tube at the lower angle of

FIG. 105.



UTERINE FIBROID WITH ELASTIC LIGATURE APPLIED. (AFTER MARTIN.)

the wound; others again pass a rubber tube into Douglas's pouch per vaginam.

Of the intra-peritoneal methods I deem A. Martin's, of Berlin, to be the best. Strict Listerism is observed, and the vagina is thoroughly washed and cleansed with a strong solution of carbolic acid, or of a one to one thousand of corrosive sublimate. He first ties and cuts off the broad ligaments, and also the ovaries, unless the latter are so high up on the tumor that they can be removed together with it. Adhesions are now severed and tied; the bladder, if attached, is separated; and the tumor made free from every extra-uterine attachment. The tumor is now turned out of the abdominal wound, and many sponges packed in the empty peritoneal cavity. Elastic tubing is thrown as low down as possible, around the cervix, or what purports to be the cervix, although much enlarged, and it is tightly drawn and tied (Fig. 105).

FIG. 106.



THE FIBROID CUT OFF AND SUTURES APPLIED TO THE STUMP.
(AFTER MARTIN.)

The tumor, if large, is now split by a longitudinal incision, and each half removed by an oblique incision, meeting its fel-

low and ending about two inches away from the tubing. The cervical canal above the tubing is cauterized by a saturated solution of carbolic acid, and its opening closed by an embedded figure-of-eight stitch, or by interrupted sutures, of gut or of fine silk (Fig. 106). If the pedicle be a large one, it is transfixed just above the rubber tubing by a double ligature.

FIG. 107.



DRAINAGE-TUBE INSERTED PER VAGINAM.

and tied in halves. If it is not large, this mass-ligature is not applied; but in every case, the two flaps of the stump are sewed together by interrupted silk ligatures, and the stump covered with peritoneum. The elastic tubing is now re-

moved, and if bleeding occurs, the whole stump is sewed through and through by deeply-placed sutures. A uterine forceps is forced through Douglas's pouch per vaginam, and a winged rubber drainage-tube is seized by it and pulled back into the vagina, which is dusted with iodoform, and loosely packed with iodoform gauze (Fig. 107). The abdominal incision is wholly closed up and treated, as in the operation of ovariectomy. To prevent the air from giving access into the abdominal cavity, the drainage-tube is bent upon itself in the vagina; but it is straightened out several times a day to let out the collected serum.

Lange* uses a permanent rubber ligature, which is secured, not by its own knot, but by a strong silk thread. In one instance, in order to keep up the circulation of the distal end of the stump and to prevent its necrosis, he passed this rubber ligature around the stump underneath its peritoneal covering. The tissue of the stump was then excised in the shape of a funnel, so as to remove the mucous membrane of the cervical canal. At the deepest point the actual cautery was used, and a small quantity of iodoform poured over it. The funnel was closed by deep cat-gut sutures, between which the peritoneal edges were adjusted by superficial sutures.

The late Dr. Schroeder transfixed the womb near the os internum with a double ligature and tied on either side. He then cut the stump obliquely, sewed the wedge-shaped flaps together by two sets of deep sutures, and then stitched the edges of the peritoneum accurately together.†

The reasons why the extra-peritoneal mode of securing the stump, is adopted by British surgeons, who have probably proved to be the more successful operators, are the danger of the sloughing of the stump, the risk of secondary hæmorrhage, and the fear of infection from the septic mucous canal of the cervix. The greatest danger is undoubtedly that from hæmorrhage, because the large and vascular stump shrinks up so much, that any mass-ligature, with perhaps the exception of

* *Medical News*, June 12, 1886, p. 651.

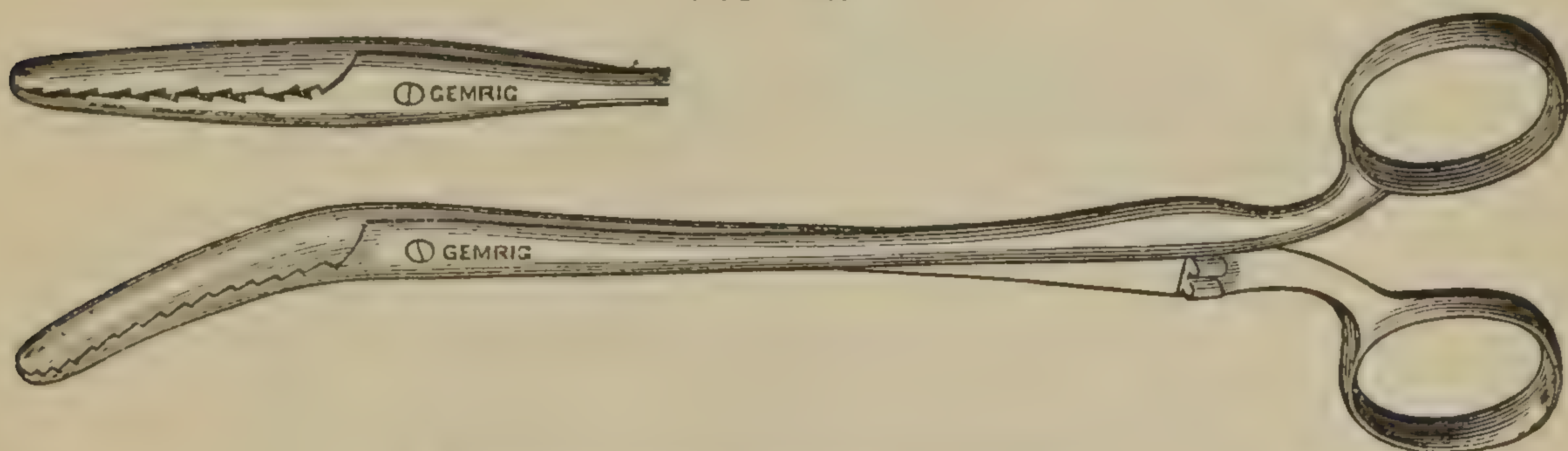
† *Transactions of Obstetrical Society of London*, Vol. xxii., p. 127.

Lange's rubber-tubing, may constrict the blood-vessels for only a few hours.

The main objections to the extra-peritoneal treatment of the stump are, (*a*) The impossibility of cutting off of communication between the peritoneal cavity and the outside of the body,—which was the cause of the great fatality of ovariotomy, until the intra-peritoneal treatment of the pedicle was adopted. (*b*) The necessary sloughing of the distal portion of the stump, a sloughing which is liable to be transmitted to the proximal portion—viz., that portion below the clamp—and to cause a dangerous putrilage to enter the abdominal cavity. (*c*) The excessive and painful tension on the stump and the consequent sinking in of the abdominal wall. (*d*) The slow healing by granulation of a large and deep abdominal sore; and (*e*) The necessarily weakened abdominal wall, often resulting in a ventral hernia.

The preliminary steps of this operation are the same as those for the intra-peritoneal. Adhesions are severed, the broad-ligaments are cut, and Wells's large locking forceps,

FIG. 108.



WELLS'S LARGE LOCKING FORCEPS.

some straight and others curved, are applied to the bleeding edges. The bladder is freed from the tumor, which is now emptied of any fluid it may contain, and turned out of the abdominal wound. This extraction is greatly facilitated by Thornton's mode of "screwing a nickle-plated corkscrew with a broad blade into the tumor, and using it as a handle." For, if volsella forceps are used for this purpose, the vascular coat of the tumor is torn and much blood is lost. The cervix

is then secured immediately above the vagina, either by Kœberle's *serre-nœud*—which is simply a small wire *écra-seur*—or by some such screw-clamp as Wells's, Tait's, or Atlee's.

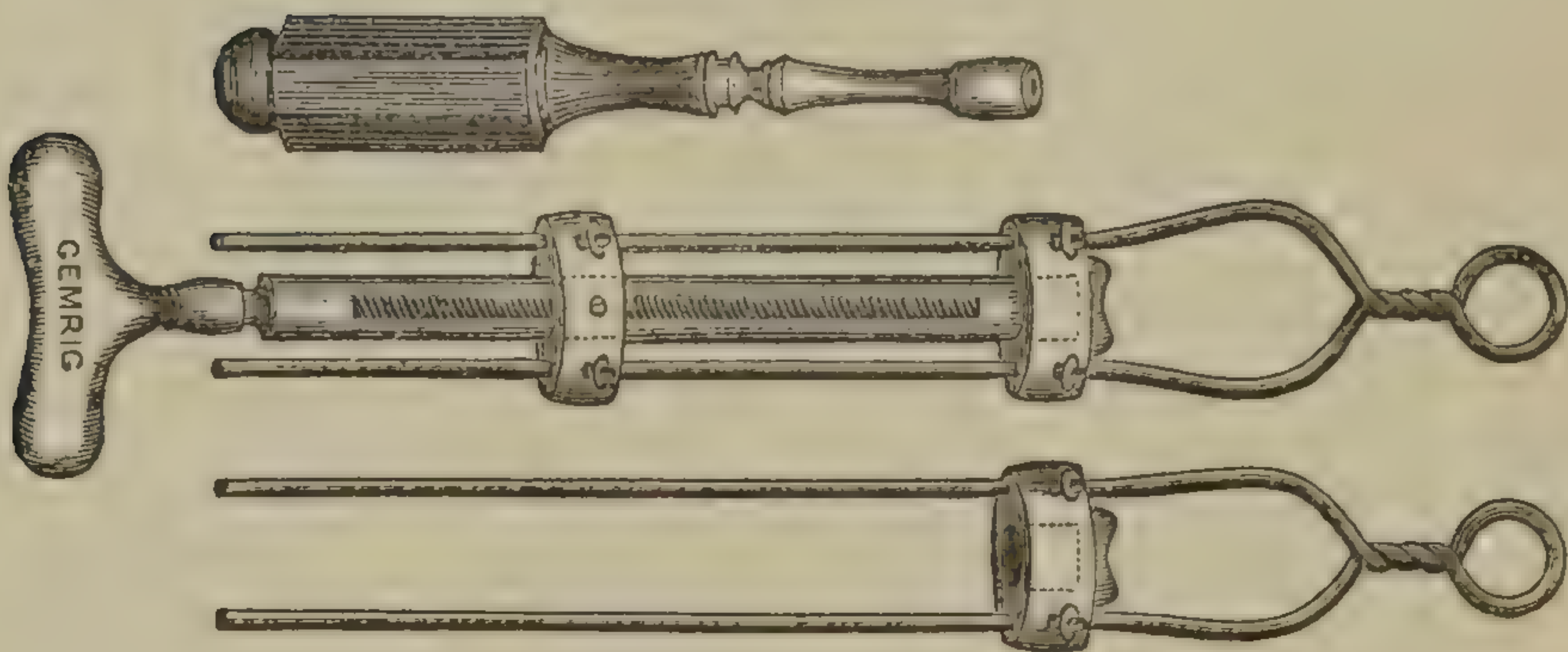
The tumor, with the ovaries and tubes, is cut off, and the

FIG. 109.



WELLS'S CLAMP.

FIG. 110.



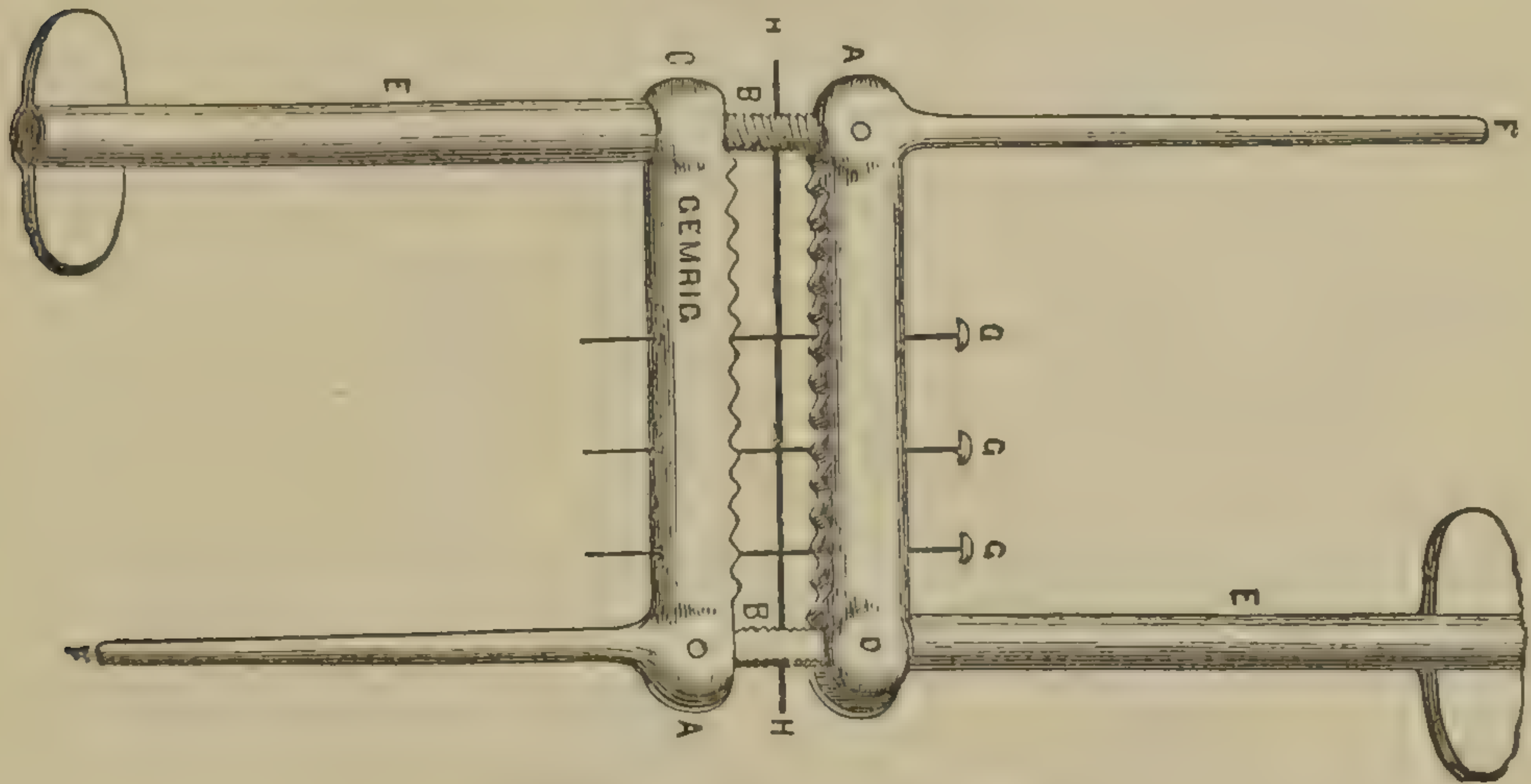
TAIT'S CLAMP.

operator, now at his leisure, removes the locking forceps, one by one, and ties the bleeding points. The cervical canal is also cored out by a funnel-shaped incision, and disinfected by pure carbolic acid.

It is well to remember, that in fibroid tumors the bladder is often dislocated and carried up very high. It is liable, then, to be mistaken for a portion of the broad ligament and to be torn or otherwise injured. It is, therefore, a good plan not to empty the bladder before the operation, so that its outlines

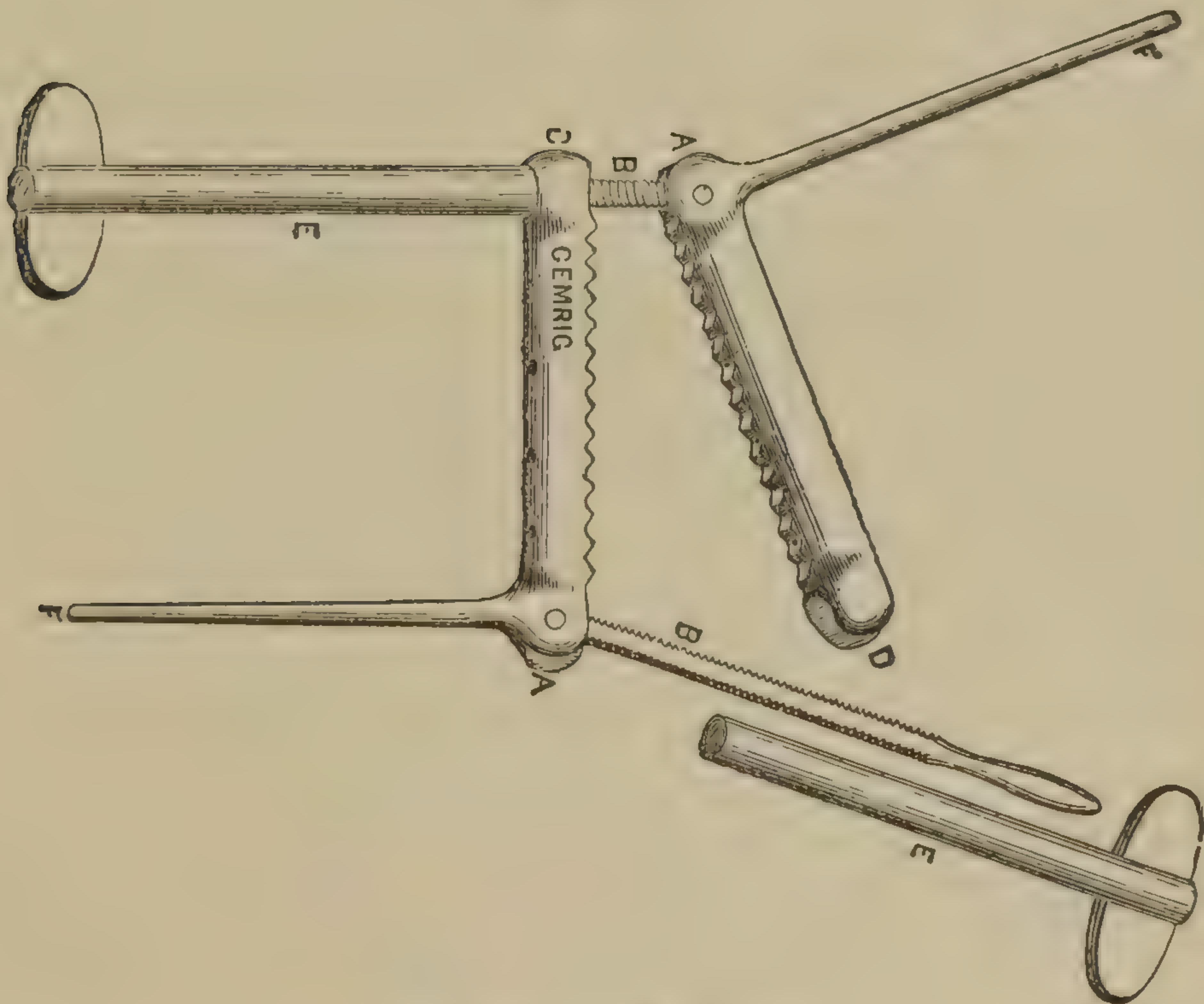
may be well defined by the contained urine. In case of doubt, the sound should be introduced into the bladder. Before ap-

FIG. III.



ATLEE'S CLAMP, CLOSED.

FIG. II2.



ATLEE'S CLAMP, OPEN.

plying the screw-clamp, it is advisable to crowd the mass together, by a preliminary silk ligature. Keith, who is the

only operator that uses this clamp, thinks that less sloughing takes place below the constricted portion, than when the wire clamp is used. His success—three deaths out of thirty-eight cases—is certainly phenomenal, and the best on record.

After the screw- or wire-clamp has been applied, and the "toilet" of the peritoneum completed, the abdominal wound is sewed up as in ovariectomy; but some of the stitches are made to include the peritoneal coat of the stump, which is brought to the lower angle of the wound. If the adhesions have been extensive, a glass drainage-tube is introduced above the stump and along its side. To prevent the slipping of the stump from the grasp of the clamp, it is transfixed by two long hair-lip pins, the points of which are afterwards covered with adhesive plaster, or with blunt tips which are specially made for the purpose. The raw surface of the stump is tanned by an application of a saturated glycerole of iron persulphate, the wound well sprinkled with iodoform, and the abdomen covered with a 50 per cent. iodoform gauze, which is also well tucked under the clamp, and packed around and over the stump. Over this, is placed a roll of cotton-wool recently baked, or of medicated cotton, which is kept in place by adhesive straps, and over all, a flannel binder. This dressing need not be disturbed for at least a week, and that portion near the clamp not for three or four days more, unless it be needful to screw up the clamp, or the wire, tighter.

LESSON XXXVI.

THE NERVE-COUNTERFEITS OF UTERINE DISEASES.

GENTLEMEN: The crying medical error of the day is, in my opinion, the mistaking of nerve-disease for womb-disease. From this widespread delusion it has come to pass, that no organ in the human body is so over-treated and, consequently, so maltreated, as the womb. Fine lesions of nerve-ganglia are hard to make out, however exacting their symptoms. Take, for instance, insanity or epilepsy; even in the dead-room their lesions often elude our instruments of precision. But the womb, unfortunately, being reachable, seeable, and directly treatable, is charged with almost all the ills that female flesh is heir to; and it is, too often, made the scapegoat for headaches and nape-aches, for spine-aches and backaches, and for various other so-called uterine symptoms, which may be due solely to nerve-exhaustion, or malnutrition of nerve-centres, and not to reflex action from some real or some supposed uterine disorder. Then, again, misled by traditional teaching, by such a name as woman (womb-man), by such a misnomer as hysteria (womb-disease), we yoke our practice to theory. So, whenever we find a train of *hysterical* symptoms associated with a disordered or a displaced womb is a *womb-man*, we jump with doubled energy to the conclusion, that the uterine lesion is not a symptom, or a sequence, or a coincidence, but the factor, and at once proceed to treat it accordingly. Then, again, forgetful that the imponderables are great forces in nature, that a single mental stimulus to unstable nerve-molecules will awaken many reflexes, we overlook the tyranny of woman's over-sensitive organization, and underrate the influence of nerve perturbations or of psychical disturbances.

To substantiate these assertions, let me recall a case to your memory: Six weeks ago to-day, I brought before you a very helpless invalid, who, accompanied by her husband and her sister, had just arrived from one of our Southern States, after a long journey made on a litter in a baggage-car. She was a large, stout, and well-conditioned woman, forty-two years of age, and the mother of several children. Eleven years ago she gave birth to her youngest child. The labor was easy, but her getting up was slow, and, when she tried to walk, she suffered so much pain, that before long she took to her bed, where she had stayed ever since, growing more distressed and more helpless every day. During all this time she had, to use her own language, "been doctored for womb-disease," but without benefit. She could lie in only one position, viz., partly on her right side and partly on her back, with her knees drawn up and her hips higher than her head. To keep this unnatural and ludicrous posture, a large folded blanket and half a dozen pillows were needed. Then, she had a thick pad placed between her knees and a perforated one under her right ear. In addition, "to keep her womb up," she wore a formidable-looking abdominal brace. Her lower limbs were, she alleged, paralyzed, and, in fact, as you will remember, I thrust a pin several times into them below the knee without inflicting the slightest pain. Her appetite was poor, her bowels extremely costive, her monthly periods regular, but painful and somewhat free. She was wakeful at night, full of aches and pains, and had an irritable bladder, which kept her and her nurse pretty busy. Her feet and hands were always cold, and she complained of being always very tired. A more helpless creature could hardly be met with; a more padded and bolstered and upholstered one I never saw before.

But the case turned out more promising than it first looked. As soon as I had laid eyes on the woman, and had asked her a few questions, I felt sure that her mind was more diseased than her body, and that she was, in short, hysterical. These conclusions were arrived at for the following reasons: *Firstly*,

she was too well nourished for a person with any serious uterine disease. *Secondly*, her skin, excepting that on her legs, was so over-sensitive that she would not let me palpate her abdomen, or make a vaginal examination. *Thirdly*, there was a suspicious capriciousness about her pains; they were too irregular and shifting for fixed organic disease. *Fourthly*, there was an indescribable affectation of suffering, an exaggerated self-consciousness, which made her enjoy the description of her aches and pains. *Fifthly*, she wore the tell-tale hysterical mask; that is to say, while she spoke of her sufferings in language and tones consonant with their alleged severity, there was no play of the features, no movement of the facial muscles; her face was as blank and unmeaning as a mask. Lastly, her history revealed two nerve-shocks; the sudden death of one of her children just before her lying-in, and a family trouble—a skeleton in the closet—which had worried and fretted her for many long years.

You will remember that, in order to make a thorough diagnosis, I was obliged to put her under ether, and the following information was gleaned: The vagina was flabby and lax; the womb perfectly movable, but somewhat lower than it should be; the os externum slightly torn, but not enough to warrant an operation. The sound gave a measurement of barely three inches, and there were the usual signs of uterine catarrh. Now, such lesions should not make a woman bedfast. Many a poor woman is earning her daily bread by hard labor, and many a lady is faithfully discharging her social and domestic duties, although handicapped by reproductive organs in a far worse plight than our patient's. So I told you, then and there, that she was bedridden from her brain and not from her womb; and that I should pay very little attention to the latter organ, which had already been over-treated.

To-day, after the lapse of six weeks, I, with no little pride, bring her again before you, to show you the result of the treatment. The uterine lesions are not much better, and they probably never will be until the change of life; yet her pads, and pillows, and bolsters, have been laid aside, and her

abdominal brace is no longer in use. Her last period was still free, but without pain. She moves about, as you see, without difficulty. She goes upstairs and downstairs all over this large building, and she has walked several of our long squares in the streets. Yesterday, she rode in the street-cars to a dentist, two miles away, and had six fangs out. To-morrow, she starts alone for home. Now, what has brought about this marvellous change? And why is she so well, when her uterine troubles still exist? These are the questions which I know you are asking yourselves, and I shall try to answer them as soon as she is out of hearing.

Before making this case the text of my lecture to-day, let me briefly allude to another one which I have lately treated in my private hospital, and which is a sample of many others. A very weak and emaciated lady, sent to me for uterine trouble, had ptosis of the right eyelid, complete paralysis of the lower extremities, and such anæsthesia in them that the prick of a pin could not be felt. She also had irritable bladder, weariness, wakefulness, costiveness, and cold feet. Further, she had a retroversion of a hypertrophied womb, which had been very ably treated by her physician. These uterine lesions had drawn him off the scent, and had led him to the belief that they alone were the causes of her ill-health. But my reasoning was this: Why, if so, is she still helpless when the womb is kept in place by the pessary which she is wearing? I soon found out the true cause, which was mental distress at the engagement of her daughter with an unsuitable person. Without local treatment of any importance, and simply by moral and constitutional remedies, she left me in seven weeks' time, not cured—for she did not stay with me long enough—but so immensely improved, that the ptosis, the paralysis, and the loss of sensation had disappeared; the constitutional symptoms had vanished; she had gained much flesh, and was able to walk about with the aid of a cane. Of course, the cause of her worry was not removed, but the effect of the treatment made her better able to bear it, and not to exaggerate it.

I know of another sofa-ridden lady, of wealth, who had for many years been locally treated by some of our best gynecologists. She was put on her feet and made well, by a family quarrel resulting in a prolonged law-suit. These are the cases which are so constantly being cured by mesmerists and itinerants, and by faith and pilgrimages. I could give you the history of other such bedridden cases, sent to me for uterine treatment, which, without any such treatment whatever, were restored to health. Many cases I have had which, of course, needed, in addition, some local treatment; but what I wish strongly to impress upon you to-day is, that in the vast majority of bedridden or of sofa-ridden women, it is not so much any existing uterine trouble that puts them on their backs, as it is nerve exhaustion from some nerve-shock. For, in these days of mental overstrain, nerve-exhaustion, or neurasthenia as it is technically called, is a most common disorder in our over-taught, over-sensitive and over-sedentary women. It manifests itself by hysteria; by spinal irritation; by a lack of nerve-coördination, and by a crowd of reflex symptoms, among which those of a uterine complexion often overshadow, and indeed outlast, all the others.

I have not the time to go into a study of that marvelous kinship which exists between mind and matter; but let me draw this too common picture from life: A young girl, who entered puberty in blooming health, with red cheeks and without an ache, is overtasked and overtaxed at school, and her health begins to fail. She loses her appetite, lies awake at night, and grows pale and weak. She has cold feet, blue finger-nails, and perhaps complains of infra-mammary and ovarian pains. Headache and backache, and spine-ache and an oppressive sense of exhaustion, distress her. Her monthly periods, hitherto without suffering, now begin to annoy her more and more, until they become extremely painful, and at these times dark circles appear under her eyes. Her linen is stained by a leucorrhœa, and bladder troubles soon set in. She is wearied beyond measure by the slightest mental or physical exertion; the short visit from a friend will upset her

for the rest of the day; a grasshopper is a burden to her, and she finally becomes very nervous or hysterical. Now, very unfortunately, the idea attached to this group of symptoms is, that the womb is at fault. A moral rape is, therefore, committed by a digital or a speculum examination, and two lesions will be found—firstly, as a matter of course, the natural virginal anteflexion, and, secondly, a slight uterine catarrh. These are at once seized upon as the prime factors, and she is accordingly subjected to a painful, an unnerving, and a humiliating treatment for the flexion and the endometritis. Unimproved, she drags herself from one consulting-room to another, until finally, in despair, she settles down to a sofa in a darkened room and becomes the spoiled pet, or the vampire, of the family.

Now, Gentlemen, ten to one—yes, a hundred to one, for I speak from a large experience—this overwearied, brain-crammed girl needs a uterine treatment no more than you need one. Her anteflexion is natural, her leucorrhœa merely a passing symptom, her dysmenorrhœa a spasm. She has simply jaded nerves—worn-out ganglia—and unless they are treated, and in the way that I shall presently indicate, she is probably doomed to hopeless invalidism.

You will naturally ask me, What is the explanation of such misleading symptoms? What means this headache, this backache, these uterine and vesical symptoms? What is the interpretation of these counterfeits of organic mischief? The precise pathology I cannot pretend to give, for the mystery of life has never been solved, and cerebration and innervation are still the riddles of the sphinx. But I take it to be essentially malnutrition of nerve-centres, followed by disturbances in the circulation of the nerve-fluid, and consequently of the blood. The nerve-centres of this brain-crammed girl, or of the worrying, fretting, and grieving women, to whose cases I have just referred, were unable to bear the strain thrown on them, and they broke down. But jaded nerve-centres make poor blood and faulty circulation, and from these come cerebral and spinal irritation and general exhaustion.

Let me pursue the inquiry further, premising that the unknowable can be described only in terms of the knowable. The vaso-motor system of nerves controls the calibre of the blood-vessels. It contracts them and it dilates them. On the equilibrium of these two movements of ebb and flow, depends that adjustment of wear and repair, which means health. On the other hand, disturbance in the relation of these two movements, is followed by disturbances which consist of local anæmias and local hyperæmias. For instance, what is the blush of shame, but a temporary loss of control over the vaso-motor nerves by which the blood-vessels are dilated—capillary hyperæmia? What is the pallor of fear, but another form of loss of nerve-control of greater energy by which the blood-vessels are constricted—capillary anæmia? Thus shame makes us warm, but we shiver when afraid. Imagine now a woman, always disturbed by one or the other of these emotions—shame and fear—and you have essentially a very nervous or an hysterical woman. For, when all control over vaso-constrictors and vaso-dilators is lost, as I assume it to be in hysterical and nervous women, the same kind of blushing and blanching, which we see on the skin, is perpetually going on in the internal organs. Hence, the stable and unstable congestions and anæmias of certain localities; hence, the flashes of heat and the shivers of cold which these cases complain of; and from these alternate conditions come cerebral and spinal irritation, with headache and backache, and utter weariness. The brain blushes, and headache and wakefulness ensue; it blanches, and the patient is drowsy and heavy with cerebral exhaustion. The stomach blushes or blanches, and symptoms in accordance with each condition arise; hence we get gastralgia, flatulence, capricious appetite, and nervous dyspepsia.

Some organs blush more than they blanch. Thus hyperæmia, or passive congestion of the lower portion of the spine, is often constant, causing backache and loin-ache. The womb and its annexes, being exacting organs in menstrual life, bear the brunt of the circulatory disturbances, and are

usually blushing. The consequence is swollen, tender, and prolapsed ovaries, and congested wombs, with flexions and dislocations, with menorrhagia and leucorrhœa. But they also blanch, and amenorrhœa or scant menstruation results. Also, active neurosis of the uterine group of nerves takes place, with either local or reflex manifestations, which mimic grave structural lesions of the womb itself or of distant organs. From increased reflex irritability comes spasm of the circular fibres of the cervical canal, causing dysmenorrhœa. All the sphincter muscles are liable to spasmodic contraction, and thus arise such mimicries of organic injury, as loss of voice, dyspnœa, palpitations of the heart, irritable bladder, painful rectum, and difficulty in swallowing, in defecating, or in urinating. Thus are explainable those puzzling cases, in which the womb is in its natural position, and of its natural size, in which the sound readily enters, in which no lesion is appreciable, and yet painful menstruation, and backache, and bearing down, and weariness are complained of. So can we explain many cases of neuralgic ovaries. In these diseases structural changes cannot always be found, and yet they are so stubborn as to be shunned by all physicians.

Sometimes there will exist a concurrence of essential and primary uterine disease, with secondary nerve-exhaustion, the former begetting the latter. We see this often in women hurt and worn-out by child-bearing, or in women exhausted by sexual excess. In these cases, there will be an exaggeration of the uterine symptoms, a localized hysteria. There will also be very commonly an hysterical bladder, mimicking vesical catarrh, and even stone; sometimes, indeed, a hysterical coccyx aping every symptom of traumatic coccygodynia. For hysteria is liable to billet itself upon maimed portions of the body, and especially upon those organs—such as the womb and bladder—which hold an emotional kinship with the brain. This kinship between the brain and the bladder, some of you will keenly appreciate on examination-day. Then, again, from the hyperæmia and dysmenorrhœa, developed by the neurosis, we may get secondary structural

lesions, such as metritis, endometritis, and displacement, which may need a local treatment beside the general one. But, apart from these cases and those which clearly start from antecedent mischief to the reproductive apparatus, no good comes from local treatment. Nor do they respond much better to ordinary therapeutic measures. They stand, as a class, by themselves, and need a special treatment, which I shall soon describe to you.

Manifold are the causes of nerve-exhaustion and of its close ally, hysteria, with its mimicries and counterfeited symptoms. The most common factors are those which produce fret, worry, or grief; in other words, mental wear and tear. These are: crosses in love, disappointed affections, ill-mated marriages, skeletons in the closet, reverses of fortune, mental over-strain, the prolonged nursing of near and dear friends, and the loss of them by death. Absurd as it may seem, four of my patients were wholly prostrated by the new cares of sudden prosperity, and by the building and furnishing of their houses; while one of my patients invariably takes to her bed, when she dismisses a servant and engages another. Few school-teachers wholly escape this form of disease, and many of their pupils suffer from the brain-cramming, and the buckram proprieties of the boarding-school. The cause of break-down in the health of several of my patients, was remorse at having used means to prevent conception, and, in one, at having resorted to criminal abortion. The climacteric, with its nerve perturbations, is responsible for causing this disease, and so also are sterility and sexual excess. The over-worked and the under-fed also suffer; but, it is not over-work that breaks down the nervous system so much, as the causes of over-work—the failures and disappointments of life, its cares and its cares. Life is big with shattered hopes and wrecked ambitions, and life is, therefore, full of wrecked and shattered nerves.

What are the symptoms of nerve-exhaustion? Their name is legion, but the most common ones are those, which tradition has labelled as the symptoms of womb disease, such as difficult locomotion and a bearing down feeling, headache

and backache, pain in the left ovary, and spinal irritation, weariness and wakefulness, cold feet and an irritable bladder. The sense of exhaustion is a remarkable one; the patient is always tired; she wakes up tired, she passes the day tired, and she goes to bed tired. She sighs a great deal, and her arms and legs fall asleep. Other symptoms not quite so common are the cerebral ones, such as low spirits, bad dreams, nightmares, and night terrors; explosive sounds in the head, a loss of memory, the fear of impending insanity, the dread of being left alone, or of being in a crowd; inability to protrude the tongue, weakness of vision, morbid keenness of smell or of taste, and spinal chills and locking of the jaws produced by the lower or the tremulous notes of the organ. The last symptom occurred in several of my patients, and prevented them from going to church. The uterine reflexes are: uterine, pelvic, and ovarian aches, pendulum pains swinging from one ovary to the other, jerking muscles which cannot be kept still, a trembling or quivering in the abdomen, or a feeling that it needs support, which is often given by pressure with the hands. The abdominal organs display their interest in the general neurosis, by flatulence, by the swallowing of wind like a cribbing horse, and the belching of it in large and noisy volumes, by nervous dyspepsia, nausea, or vomiting, by either diarrhœa or costiveness, usually the latter; and by great exhaustion after a movement of the bowels. One of my patients had, to her great mortification, an urgent movement of the bowels whenever she received a letter from her husband; another one, when the door-bell rang, or when a friend called on her. Some patients are annoyed by clammy hands and feet, or weakened by profuse sweats, sometimes local, often unilateral. Others are frightened by cramps, or by tinglings, by loss of sensation or by numbness in the extremities, which are deemed the precursors of paralysis.

Another very remarkable, and often very misleading symptom, is an aneurismal pulsation in the aorta. Repeatedly have patients been sent to me with a diagnosis of aneurism of the aorta, when their sole disease was nerve-prostration.

Abnormalities in the sexual feeling are not uncommon. In most, all desire is absent, or coition is painful; in some, the sexual feeling is increased; in yet others, it is urgent, but cannot be gratified; in a few the dreams are erotic.

For the treatment of this disease we are indebted wholly to one of our Trustees, and my valued friend, Dr. S. Weir Mitchell, and to him we owe a large debt of gratitude, for teaching us how to cure cases which had hitherto been the opprobrium of the profession. Struck by his remarkable success, I followed his lead in those cases of back-ache and weariness and wakefulness which tradition has labeled as disease of the womb, but which display no coarse uterine lesions—cases with leucorrhœa, or with amenorrhœa, or with menorrhagia, or with dysmenorrhœa, and yet so clad with the livery of hysteria as to perplex alike the psychologist and the gynecologist. Then, again, I was led to combine this treatment with a local one, in those cases of undoubted uterine disease, in which the exacting constitutional symptoms were out of all proportion to the local lesions. The results of the rest, of the massage, of the electricity, of the seclusion, and of the feeding, which constitute this treatment, so far surpassed my expectations that I can even now say with Horatio:

“Before my God, I might not them believe
Without the sensible and true avouch
Of mine own eyes.”

Nothing is more easy than to make assertions; nothing so dreary as to narrate cases. Yet I fear that, unless I prove the former by the latter, you will be led to say with Mr. Greatheart, “These are but generals; come to particulars, man.” The particulars I shall limit to four illustrative cases, to but four out of very many; one, because local treatment was not adopted; another, because it was first tried and found wanting; a third, because it preceded the constitutional treatment; the fourth, because it was kept up throughout the constitutional treatment.

CASE I.—On March 6, 1878, a tall and large-framed girl

of twenty was sent to me from a neighboring State. She was in wretched health, and had been an invalid for some five years. Her catamenia began at the age of thirteen, and were for two years free from pain. Then, from some unexplained cause, dysmenorrhœa began, which had gone on increasing until it was unbearable without anodynes. She suffered from aches all over her body, but more especially from back-ache, and from constant and very severe pain in both ovarian regions, the left being the worse. She had frequent fits of unconsciousness (hystero-epilepsy), out of which she awakened with frightful screams. Either *ardor urinæ* was present, or else a very obstinate retention, for which the only relief lay in the catheter. To complete the category of ailments, she had leucorrhœa, a uterine tenesmus which kept her from walking, obstinate costiveness, and a loss of all appetite. As her mother informed me, with probably some exaggeration, not a week had passed by for five years without several visits from her physician, and many hundred miles had he driven simply to draw off her water. About a year before I saw her, she went to an adjacent city, and for several months was in the hands of a gentleman whose name is a warrant that she had the very best advice possible. He diagnosticated ante-flexion with stenosis, at least I so infer, because after a long local treatment he advised a "cutting operation," and, upon her refusal to submit to it, introduced a tent which lighted up a very severe attack of peritonitis. This made her worse; she became bed-ridden, and then began to suffer from wakefulness, and also from severe uterine and ovarian colics, for which very large doses of chloral and of morphia were needed.

On March 10, after a very careful examination, I found the womb and ovaries very tender, the former turgid, anteflexed, and somewhat bound down by adhesions. The sound touched an exquisitely tender fundus without any difficulty whatever, and gave a measurement of 2.75 inches. A few drops of blood followed its withdrawal. Feeling satisfied, both from her history and from this examination, that the dysmenorrhœa was partly congestive, and that the severity of the symptoms

was out of all proportion to the local lesions, I advised Mitchell's treatment. I may as well confess that I made there and then a uterine application—one of iodine. It was the first and the last one, however, and, I am now sure, a wholly needless one; but the speculum was *in situ*, and—well, I could not resist the temptation. On the next day, she was put to bed in a third-story room, and placed under the charge of a nurse. Her aunt, at whose house she was staying, and a most judicious lady, did not see her at all for the first week, then but once daily for a few minutes, and later in the treatment twice daily. Throughout the treatment my patient saw no one else but her nurse, the woman who rubbed her, Dr. George S. Gerhard, who was kind enough to apply the electricity, and myself. She was not allowed to read or to write, and was at once put on a skimmed-milk diet, although she protested that milk and butter were poisons to her. Two days after the beginning of this treatment, she had a bad attack of retention of urine. I made the nurse pass the catheter, and sternly told my patient that this must never happen again. It never did.

Apart from potassium bromide and morphia for the first few days, she got no other medicines than Trommer's extract of malt, dialyzed iron, the zinc valerianate, and an occasional aperient pill. By March 18, she had reached four quarts of new milk daily, and could sleep without narcotics. On the 19th she had her first breakfast, consisting of an egg and buttered toast. March 22, her courses came on without any pain whatever; she was indeed unconscious of the flow until she found herself wet. On the 28th, she drank throughout the day four quarts and a half of new milk, ate three boiled eggs with bread-and-butter for breakfast, and devoured actually one-half of a broiled chicken weighing four and a half pounds. To make a long story short, in this manner she went on with unmitigated appetite and uninterrupted improvement. Not only was her next monthly flow also without suffering, but by that time she was free from any pain or ache whatever. She now could sleep ten hours at a stretch.

and nap it as well between her meals. On April 22, she began to sit up in bed, and her mother was shortly afterwards permitted to visit her for a few days. Her astonishment at her daughter's improvement was unbounded. Early in May, she was walking about the house, and later, in the streets. On the 14th her father came and took her home—well. "They left this morning," wrote her aunt to me, "and a happier pair I have rarely seen."

During the forty-five days of her treatment, she drank two hundred and eight quarts of milk, and averaged two and a half eggs a day. Her waist expanded from eighteen inches to twenty-seven, and she gained twenty-two pounds in weight. On the 15th of last August she wrote, saying, "I have been perfectly well ever since my return. I have walked with father two miles every evening, once over three miles; and, when I first saw you, I could not walk across the room without screaming with the pain." I saw her on April 27th of the following year, and found her so much improved in appearance, that I failed to recognize her. Apart from an occasionally irritable bladder, she deemed herself perfectly well.

I have described this case somewhat at length, in order to illustrate the mode of treatment, and to show what it can do. But I must refer those of you who wish a more detailed account to Dr. Mitchell's little book, entitled "Fat and Blood, and How to Make Them."

CASE II is the wife of a physician who at my request kindly wrote out her history in the following letter:

"JULY 15, 1878.

"DEAR DOCTOR GOODELL—I take pleasure in reporting my wife's case before and since she came under your observation.

"She is now thirty-four years old, has been married eleven years, and has borne three children. In the first three years of married life there was no issue, until an operation of slitting the cervix, after which conception occurred. The first labors lasted from six to eight hours; the last one only half an hour, although the child weighed ten pounds and a half; none were instrumental. From this last accouchement resulted retroflexion, partial prolapse, hypertrophied womb measuring three and a half inches in length, and all the accompanying symptoms of that condition. There were present pelvic pains, great weariness, inability to walk even a block, cervical and

corporeal endometritis, and great pain in coition. She also, from the extreme tenderness of the womb, could not bear the softest pessary. Finally menorrhagia set in so profusely that she would become unconscious during her periods. She was under the treatment of two eminent gynecologists* during three years and a half, but without lasting benefit.

"In October last I called you in, and your diagnosis was retroflexion of an hypertrophied womb, with eversion and hypertrophy of the lips from laceration of the cervix at her last confinement. For this you suggested an operation, which you performed November 1, of last year. Although wholly successful, this operation made no other change in her general condition, than in reducing the amount of her periods and in permitting the use of a pessary. You now urged a system of rest, electricity, massage, and diet, which was begun early in December.

"Her condition at this time was inability to sleep, dreadful afternoon headaches, flighty neuralgic pains of great severity, constant back-ache, frequent and prolonged nervous chills, distressing palpitations of the heart, obstinate constipation, and extreme emaciation. Her weight was eighty-seven pounds, although the average weight in health had been one hundred and six.

"During the treatment she gained twenty-four pounds—five pounds more than when in health. She has lost all traces of pelvic and neuralgic pain, sleeps from eight to ten hours undisturbed by night horrors, walks long distances without fatigue, has normal menstruation, is free from constipation, and has a very good appetite. The condition of the womb in position, size, etc., is normal, though she still wears the modified Hodge pessary introduced by you after the operation.

"I very naturally watched this case with the greatest interest from its incipency, and believe that the first permanent step toward a cure was your operation on the cervix; for so long as there was hypertrophy, applications gave no relief, and pessaries caused excessive pain. The next successful step was the seclusion, rest, manipulation, electricity and dietetic treatment, together with the control you had over the psychical traits peculiar to hysteria.

Very truly yours,

X."

This was a very stubborn case, one which needed the firmest moral treatment. At one time excessive vomiting set in, which lasted several days, and came nigh ending my patient's life. Nothing stopped it but a cruel scolding, which was hard to give, as she was a gentle, lovable creature. Dr. Gerhard, who administered the electricity, will bear me out in the statement that it was an exceedingly tough case. I meet her constantly, always looking perfectly well, and holding her own in flesh, although nine years have now elapsed since the treatment.

* The late Drs. Peaslee and Atlee.

CASE III.—Some ten years ago, Mrs. Y., a very highly intelligent lady, from a neighboring city, came to consult me. She suffered dreadfully at each monthly period, and had constant ovarian pains and a wearying back-ache, which kept her on a lounge most of the day. She was also barren, and altogether in a pitiable condition. After a two months' treatment, she returned home very much better, and soon after conceived. As pregnancy advanced, many of her old symptoms came back, but it was hoped that maternity would rid her of them. The shock of her labor, however, proved too great for her already shattered nervous system. She became far more wretched than before, and again sought my advice.

At this time I found all her old pains and aches running riot. She got no relief from them night or day, without large doses of chloral. The slightest exertion, such as sewing, writing, and reading for a few minutes, greatly wearied her. Even the simple mental effort, of casting up the weekly housekeeping expenses of a very small household, upset her, and she had to give it up. The act of walking one block, or of going down a short flight of stairs, or of riding for an hour in a well-padded carriage, gave her such "unspeakable agony"—to use her own words—that she would have an hysterical attack of screams and of tears. So emotional had this constant nerve-strain made her, that she could not sustain an ordinary conversation without giving way to tears. She had frightful night-terrors, and, indeed, could not sleep unless her hand was held by her nurse. Much of her time was spent in bed; in fact, she was practically bed-ridden.

I tried in vain to wean her from her anodynes, and failed altogether in doing her any good, although many remedies were resorted to and various modes of treatment adopted. Finally, in sheer despair, I put her to bed, and began the rest-treatment, the electricity being applied by Dr. Wharton Sinkler. The first trace of improvement showed itself in a greater self-control, and in a lessening of her aches and pains. Next, smaller doses of the anodyne were needed, until it was wholly withheld. Then, she began to pick up an appetite,

which, towards the close of the treatment, became so keen that, between three good meals every day, she drank six or seven goblets of milk and of beef-tea.

At the outset, I had stipulated for six weeks of this treatment, and it was with reluctance that my patient yielded to my wish. But when the time was up, she had become so impressed with the wonderful benefits she had received and was receiving, that she begged to have the treatment continued for two weeks more. At the end of that time she had gained at least thirty pounds in weight, and had lost every pain and ache. Her distressing night-terrors had wholly disappeared, and she could sleep from nine to ten hours at a stretch. I now sent her into the country, where she continued to mend, and astonished her friends by her scrambles up and down the steep hills.

Nine years have now elapsed since her cure—and cure it may well be termed, for, although not by any means in rude health, she stays well, and is able not only to fulfill all her home duties, but to undergo the dissipations and exactions of a fashionable life.

CASE IV.—G. W., aged twenty-nine, has never been well since her first and only labor, eleven years before I saw her. Three years later, after nursing a sick child, she became bed-ridden. She could not get up on her feet, because she not only suffered acute pain, but all her pelvic organs then “seemed about to fall out.” Even the act of sitting up in bed brought on vomiting and fainting. Her menstruation was scant, but attended with extreme suffering; her micturition frequent and painful. She also had violent uterine colics, which lasted several weeks at a time, and for which enormous doses of opium and chloral were needed. During these eight years, her physician, a very judicious practitioner, rarely missed seeing her once a day. But, during these attacks, he would often visit her three, four, five, and even seven times in the twenty-four hours. He early discovered a retroflexion of the womb, but that organ was so tender that neither he nor a distinguished gynecologist, who was also

consulted, could find a pessary which she could bear. For many years, she used once or twice daily a vaginal injection of a gallon of hot water, and had very appropriate topical treatment. Nothing, however, did her so much good as eighteen applications of leeches to the cervix uteri, during as many successive monthly periods. Under this treatment her appetite and sleep improved.

On September 25, 1877, she was placed on a litter and brought to me by her physician, after a long journey by rail. A more wretched creature I have rarely seen. She was pale, thin, and helpless, hysterical to the last degree, and greatly weakened by night-sweats. The retroflexed womb measured over three inches; it was heavy and dense, enlarged in every direction by areolar hyperplasia, and very tender to the touch. The cervix was studded with small cysts. The next day I put her on tonics and began a local treatment. After straightening the womb by rapid dilatation, and emptying the cysts, I succeeded in fitting her with a Hodge pessary. Finding that she mended very slowly, on November 5, I began the use of massage, without, however, discontinuing local application. A few weeks later, Dr. Wharton Sinkler applied the electricity. She began at once to get better, and that rapidly. By January 11, 1878, she had increased in weight from eighty-three pounds to one hundred and nineteen. Eleven days later she walked nine of our city squares—that is to say, very nearly a mile—to my office, to report an additional gain of four pounds, making forty in all. Shortly afterwards she went home, by no means cured of her uterine troubles, but wonderfully bettered in her general health. On May 27 she wrote me, that home cares and the hardships of poverty had caused her to relapse somewhat, and that during the catamenial week she was obliged to keep on her back. But, she added, “After eight successive years in bed, I feel it a great blessing to be able to tend my own wants.” On November, 29, 1878, she came without assistance to my office. I found her somewhat less fleshy, but able to be up and do her housework. During the catamenia she now had,

on account of pain, to lie down only for four and twenty hours; but at other times she was free from aches, and considered herself very well.

Now, while I grant that this was not a cure, yet here was a woman with an incurable disease of the womb, bed-ridden for many years, and with so many exacting symptoms as to become the bugbear of her physician, sent home quite able to take care of herself, and so much better as to astonish her physician and her friends. This was a success which, under the circumstances, no other treatment could have gained.

While I deem the rapid increase in flesh in these cases a very trustworthy token of returning health, yet the success of the treatment does not always depend upon it. A single lady, who had excruciating suffering at her monthly periods, defective locomotion, and other marked uterine symptoms, besides great nervous exhaustion, became well, although she gained but five pounds. A sterile lady with a heavy and tender retroflexed womb, and with prolapsed ovaries, was wholly relieved of ovaralgia, menorrhagia, and other grievous sexual symptoms, which for years had embittered her existence; yet her gain was but seven pounds. On account of the slow and inappreciable increase in the weight of these patients, I at first feared a failure, but they turned out to be signal cures. Another lady, also, with prolapsed ovaries, and with a coccygodynia so severe that Dr. Mitchell and I thought seriously of removing the coccyx, was restored by him to health with but little gain in flesh.

Many other analogous cases, either with or without uterine treatment, could be given, but these are enough to serve my purpose.

Now, how is it that in these cases this treatment was followed by such success? The symptoms were such as ninety-nine physicians out of a hundred would ascribe to uterine disease, and to uterine disease alone, and yet my patients got well with but little or no local treatment. What then is the nexus between the means used and the apparent uterine disorder? The explanation is, to my thinking, as follows: The

essence of the disease lies, not in the sexual organs, but in the nerve-centres. These lack-lustre-eyed, thin-blooded, tender-spined, and emotional creatures give a history of exhaustion, of wakefulness, of great nervousness, of cold extremities, and of constant back-ache and ovaralgia. In their treatment there are then five ends to be secured—nutrition, sleep, rest of body and of mind, freedom from pain, and an equable circulation.

The question of nutrition is an important one, because these women are either wholly without appetite, or they reject wholesome food. Repair not equalling wear, the starved brain cannot repose, and the starving nerves clamor. By beginning the treatment with iron, with malt, and with a diet of skimmed milk, usually, after a week's time, the patient begins to crave solid food. Fixed rations of wholesome food at fixed hours are now given, together with as much new milk between times as the patient can possibly digest, and it is wonderful how much food a delicate woman can soon dispose of. A goblet of milk is always given at bedtime, so as to distract to the stomach the morbid self-attention of the brain. Also, for its soothing and hygienic effects, the patient's body is bathed every day by the nurse. By these simple measures fat is rapidly made, sleep is induced, and nerve pains are allayed, in invalids who have been reduced to the last degree of emaciation, and who have hitherto resisted every kind of treatment, even a local one for supposed or for real uterine troubles.

Seclusion is indispensable, first to free the mind from care, and next to remove the invalid from the injurious home environment. There, surrounded by an atmosphere of injudicious sympathy, her whims are pampered into an unhealthy importance, and her slightest caprices anticipated. There, her counterfeits of uterine disease, her mimicries of organic hurt, are nursed into realities, and, there, she rules as an autocrat. From this exalted position she must be dethroned. Again, seclusion puts the patient wholly under the control of her physician, a matter of vital importance, for there are

no hard-and-fast rules of treatment for restoring these women to health. Each case stands by itself; each case is a study; each has an individuality to which the mental treatment must be adapted, and the personal magnetism of the physician can alone supply the missing nerve-link between will and action. To maintain the needful authority over his patient, requires the greatest tact, the greatest alertness on the part of the physician. Sometimes he must soothe, and praise, and comfort. Sometimes, imitating the example of the Good Interpreter, who first pulled Christian out of the Slough of Despond, and then scourged him well for getting in, the physician must rescue his patient from a relapse and then scold her for it. When the character is passive and the will limp, the task is easy. Far otherwise is it with strong wills, with the wilful, when a bright and intellectual woman, as she too often is for my comfort, chooses from the start to set herself in battle array. The treatment then becomes a trial for mastery; it is brains pitted against brains, and the physician has to put more and more of himself into the encounter, until he begins to doubt very much whether he has any *more* left. Often have I lain awake, wondering what next was to be done, to save myself from the humiliation of a defeat or of a drawn battle. Often, when crossing the threshold of some room in my private hospital, have I, with my mind's eye, seen my patient draw her rapier and stand at guard, ready to parry or to thrust. Discipline in the end usually triumphs; but the wear and tear of such a case is telling on the physician. Knowing these facts from personal experience, and acting upon them, I have generally treated my patients away from home. Sometimes I have compromised the matter, by putting the patient and her nurse in a third-story room at home, but, as it were, under lock and key.

The therapeutic effects of massage and of electricity, on the circulation, are very striking in nerve-exhaustion; but, while very analogous in their action, they need a somewhat extended explanation. The four principal movements of massage are:

1. Stroking, friction, or surface rubbing.

2. Kneading, or deep rubbing.
3. Tapping, or percussion.
4. Passive and active motion, by movements of flexion, abduction, and rotation, the patient either being passive or resisting.

The first two pleasantly stimulate into action the vaso-motor-nerves, and the terminal filaments of cutaneous nerves. They also exercise the muscles without volition, and, therefore, without expenditure of nerve-force. Electricity does the same thing. Now, this is a very important item in the treatment, for all voluntary muscle-work is nerve-work, and the nerve-capital in these cases is too small to be drawn upon. Percussion, made by quick strokes with the ulnar margin of the palm, or with a wet towel, or with two rubber balls mounted on whalebone stems, temporarily stuns the nerves; and these surprises effect molecular changes, by which lax fibre and tissues of loose consistency are strengthened. Again, both massage and electricity raise the body temperature, stimulate the nervous system, promote the secretions, and increase the peristaltic action of the bowels. Also, the new and sharp impressions of electricity break up, as Anstie has shown, the mental attitude of morbid concentration on the hysterical or the pseudo-neuralgic pains.

Thus, these two agents not only act as antidotes to the evils which come of prolonged rest, but they meet several important indications. Further, the assumption having been made, that in these cases there is disturbed circulation as well as enfeebled innervation, it follows then, when a pathological process is set up by an increased flux of blood to an organ, that whatever tends to lessen the amount of blood flowing to it tends also to restore it to health. Now, both electricity and massage increase surface circulation in the large vascular district of the skin; they flush its shallow arterioles. Again, by irritation of vaso-motor nerves, they also produce reflex changes in the circulation of deeper parts. But increased capacity in one vascular district causes lessened capacity in another. Hence the flux of blood is diverted from the blush-

ing, or congested, organ, and its circulation is lessened. Causing in this manner anæmia of the brain, sittings of massage or of electricity are often followed by sleep.

In all my cases, the interrupted current was most commonly used, the galvanic current being reserved for stubborn and deep-seated pains. In a large proportion of these cases, there was more or less of anæsthesia in one leg—usually the left—accompanied by burning and cutting pains radiating from the corresponding ovary. Faradic excitability was at first always enfeebled on the affected side, but, after several applications, the muscles began to respond to the current, and motility was restored. In hardly a single instance did these nerve lesions last long. The ovaralgia was, however, not so readily overcome, but it was very interesting to watch how surely it was rubbed out and faradized out—in fact, extinguished.

The foregoing treatment was the one to which our patient of to-day was subjected, and to which she so marvellously responded. Of local applications she had but four, and these were made, more for the moral effect than for any hygienic purpose.

There is another class of cases to which this treatment is peculiarly adapted. I refer to that large group of uterine disorders which come from sexual excess. Excessive functional activity of the reproductive organs causes proportional exhaustion, and passive congestions of the nerve-centres. The turgidity is perhaps most marked at the lumbar portion of the spinal cord, whence it begets morbid irritability of the sexual organs. Repeated coition then means repeated congestions and exhaustions. Again, when one of a married couple is too weak, or one is relatively too vigorous for the other, semi-passive congestion of the nerve-centres obtains, and the exhaustion becomes permanent. Sometimes it is the husband that suffers; and one would *à priori* suppose that, since he alone of the two parts with a highly vitalized fluid, this would generally be the case. But it is not so, unless he happen to have the germs of some hereditary disease, such as phthisis, lurking in his system; or he be past the prime of

life when he marries a young or a second wife. Strange as it may seem, it is the woman who receives, and not the man who gives, that breaks down in health; but fortunately the nerve-lesions, being functional and not structural, are curable. These cases have back-ache, leucorrhœa, menorrhagia, loss of sexual desire, weakness of the lower limbs almost amounting to palsy, uterine congestion, and the usual local symptoms and lesions resulting therefrom; but they will not be benefited in the least by a topical treatment. They need to be put to bed and to be built up by massage, electricity, and food. They need especially to be separated from their husbands, and thus have both functional and physiological rest. In one of my cases, treated, unluckily, at her home, a single stolen interview undid the work, and put my patient back.

This treatment, I once saw act like a charm in one of those fat and flabby women, with feeble hearts, with menorrhagia, and with very exacting uterine and hysterical symptoms. This fat accumulates from insufficient oxidation, brought about either from impeded circulation or from impoverished blood, in which those oxygen carriers, the red blood-corpuscles, are lessened in number. This will sometimes happen after a *post partum* flooding, or, as I have lately seen it, from the prolonged hemorrhages caused by a uterine polypus. One finds it also in the muscles of paralyzed limbs. But to return to my patient, whose fat was probably due to menorrhagia; she was brought to me from a neighboring state, where she had been confined to her room for over four years, and had not been able to move from her chair to her bed, without the aid of crutches and that of her nurse. I first used the curette, then put her on a skimmed-milk diet, reducing the quantity daily until it seemed barely enough to keep her alive. Waste material was meantime eliminated by free purgation. Then, by good wholesome food, by equalizing and stimulating the circulation through the use of massage and electricity, by the use of digitalis as a heart tonic, and by very large doses of iron—thirty-seven grains of the

dried sulphate *per diem* in the form of Blaud's pill—to increase the number of red blood-corpuscles and thereby the combustion of the tissues, she got out of bed in eleven weeks' time with a weight reduced from two hundred and twenty-five to one hundred and eighty-six pounds, threw away her crutches, walked without assistance, and has since been doing well.

This treatment answers admirably also, for the spurious womb-ails and nerve perturbations of the climacteric. Nothing so surely controls the heats and chills, the shiverings and sweatings, the nerve-tinglings and emotional explosions, so common at the change of life. Of course, it would be unreasonable to suppose that all local treatment is to be excluded from the Rest-Cure, as it is technically called. Putting a woman to bed cannot cure a torn cervix, or a cervical stenosis, or an acutely bent womb. But, what I claim for it is, that it has in my hands cured granular erosion, menorrhagia, inter-menstrual ovaralgia, prolapsed ovaries, coccygodynia, and most of the diseases arising from passive congestion. It certainly is a specific for amenorrhœa, or for scant menstruation, and also for dysmenorrhœa when not dependent upon a sheerly mechanical cause—while, in the treatment of the reflex uterine symptoms of nerve-exhaustion, nothing can compete with it.

The lesson, then, which you will take home with you to-day is, that urgent uterine symptoms do not always come from uterine disease, and that there exist many nerve-counterfeits of uterine disease.

LESSON XXXVII.

SOME PRACTICAL HINTS FOR THE PREVENTION OF UTERINE DISORDERS.

SPECIAL HINTS; GENERAL HINTS.

HITHERTO the treatment of female disorders has been considered. I now purpose to suggest some means for their prevention. To stamp them wholly out may be impossible, but the alert physician can do much towards balking their approach. On the one hand, by prudent forethought and by watchful care, he can guard his puerperal patients from disease. On the other, by forewarning, he can forearm.

SPECIAL HINTS.

Puerperal Convalescence.—Let the physician see to it that his patient has a good getting up, as well from a miscarriage as from a natural labor. This will best be accomplished by his making labor a strictly anti-septic process. In *every* case of labor, the vagina should be syringed out with a quart of a 1:2000 solution of corrosive sublimate, both as soon as the os has fairly dilated, and directly after complete delivery. Before making his first examination, the physician will carefully clean his nails, wash his hands, and disinfect them by rinsing them in a 1:1000 solution of corrosive sublimate. With this same solution he will wet them, before making any subsequent examination. Handy mercuric tablets are prepared for this purpose and give no additional trouble. The day is surely coming, when, to have a case of puerperal fever in one's private practice, will be deemed a crime.

Lactation should be encouraged, and from the first day the diet should be generous. The canonical purge on the third day should be dispensed with; it weakens the body need-

lessly, and tends to promote the absorption of septic matter. Premature exertion must not be allowed. On the other hand, a recumbent posture ought not to be too rigorously enjoined. I feel persuaded, that this tradition of the lying-in chamber does more harm than good, for nothing so relaxes muscular fibre as a confinement in bed. In my experience, women feel stronger on the fifth day after labor than they do on the ninth or the fourteenth, if kept in bed. Among the ancient Greeks, these models of physical strength and beauty, the woman took a bath on the fifth day. That this was also a custom of the Romans, is evident from a play of Plautus, entitled "Truculentus," or the Churl, in which a woman, to see her lover, gets up and dresses on the fifth day. Since labor is in general a strictly physiological process, there can be no sound reason, why a woman should not sit up in bed, or even slip into a chair, whenever she feels so disposed. These are not idle phrases, but the conclusions of a long and well-sifted experience. Such movements excite the womb to contraction, and empty it and the vagina of putrid lochia, which may be incarcerated by a clot or by the swollen condition of the soft parts. When, therefore, the lochia are offensive, these upright positions should be advised as being, in fact, better deodorants than any detergent vaginal injections. By equalizing the circulation and by increasing its force, they also tend to lessen the passive congestion of the womb as a whole, the engorgement of the placental site, and especially that blood-stasis kept up by the dorsal decubitus in its now thickened posterior wall, which is, in my opinion, a very common cause of posterior displacements.

The prolonged use of the obstetric binder is another factor in the production of female complaints. The binder may be useful for the first four-and-twenty or forty-eight hours after labor: for it fills up the void left by the emptying of the womb; it gives a grateful feeling of support; it hinders the occurrence of a concealed hemorrhage, and presents a bar to the ingress of air into the uterine cavity. But, when kept on simply for the purpose of preserving the shape, by paralyzing

those abdominal muscles which it is intended to strengthen, it not only defeats the object so dear to the heart of every woman, but it weakens the retentive power of the abdomen. It also does harm by crowding the intestines upon the womb, and the womb down into the pelvic cavity. Again, by forcing backward, upon the vena cava and upon the pelvic veins, so hard a body as the womb, making it, in fact, the pad of a tourniquet, it impedes the freedom of the circulation in that organ, and greatly impairs the process of involution. Pharaoh could have devised no surer way of overcoming the fruitful health of his Hebrew subjects, than by an edict enforcing the prolonged use of a tight obstetric binder.

The lochia must be watched. If, in the third week after delivery, they still linger on, the inference may safely be made, either that the cervix is the seat of unhealed lacerations, or that the process of involution is interrupted; or that both conditions co-exist, for the former usually determines the latter. Astringent vaginal injections or suppositories will now prove to be important therapeutic agents. To this local treatment, may be added a constitutional one of iron and quinia, the former according to previously given formulæ, the latter in suitable doses, amounting in the twenty-four hours to from eight to twelve grains. Apart from its undisputed tonic properties, quinia firmly constricts uterine fibre, and, therefore, greatly aids the process of involution. Ergot and strychnia are also useful remedies to fall back on; wine and beer must not be forgotten. If, after the puerperal month, pains in the back, leucorrhœa and other well-known symptoms indicate the presence of some uterine disorder, it is evident that involution has been retarded. The speculum must then be used, and the usual uterine applications made, beginning with the milder ones; for now, if ever, is the time by such means to treat the condition of sub-involution, or to cure other puerperal lesions. If a patient has previously suffered from uterine disease, she should, after delivery, be at once put on a treatment of ergot, quina, and strychnia. By shortening the excursions of uterine fibres in their alternate

contractions and relaxations, these medicines proportionately lessen the diastolic engorgement of the womb. I am not sure but Credé's method of placental delivery, by supra-pubic expression, acts in an analogous manner. It certainly empties the womb of all clots, and squeezes it down to its minimum capacity. Such a patient also needs the timely aid of the forceps; for it prevents that laxness of uterine fibre following a long and weary labor, and hence provokes a more complete involution. But for that matter, no lying-in woman should be allowed to linger on in the expulsive stage of labor, when her physician possesses the requisite skill to shorten it.

As has been previously shown, by the loss of the perineal abutment, the sustaining power of the vaginal column is impaired, and the womb, congested by the irritation of the air which now gains access to it, will prolapse more and more. Hence, in order to prevent this mischief, the immediate operation should be performed, whenever the perineum is badly torn. If the cervix has been lacerated, it is questionable whether the immediate operation is suitable, but astringent injections are proper and will tend to heal it. If union does not take place, involution will probably be arrested; nor will it be resumed until the injury to the cervix has been repaired. The radical operation should, therefore, be performed as soon as the condition of the woman will warrant it.

GENERAL HINTS.

One potent cause of invalidism in our women, is that keeping up appearances, which infects every class of society. In other countries, where the wall of exclusiveness is insurmountable, each class accepts the situation, and lives and moves in keeping with the needs of its station in life. Here, every one feels, or tries to feel, as good as one's neighbor; but this feeling of equality, in one sense a virtue, is such no longer when the poor ape the extravagance of the rich. The man asserts his equality by his ballot; the woman, by her needle. In the one, this self-assertion is a periodic explosion, and he feels the better for it. In the woman, it is a life-long, heart-wearying

struggle. Hence that endless cutting, and basting, and turning; that perpetual needle-plying, which is the canker of so many of our households. Our very servants catch the folly, and spend all their wages and all their leisure, in vying with the toilets of their mistresses. By this foolish rivalry, the mothers and daughters of our land destroy the little health, that a false system of education has left to them. What physician is there, who has not seen ambitious mothers break down under the burden; or who does not expect some of his patients to be, at least, laid up by their spring and autumn dressmaking? One word here about the sewing-machine: While I do not believe all that is laid to its charge, yet its treadle motion does undoubtedly lead to pelvic and to portal congestions. In spite of myself, I have become convinced, that a woman, who operates on this machine as a trade, cannot escape from some uterine derangement. Even its family use is not unattended with risk, because, although intermittent, it is liable to be too prolonged.

Were not the subject already too hackneyed, I might enlarge, as other causes of ill health, upon late hours and social dissipations, upon that false and restless philanthropy which neglects home, and upon that unhappy discontent which forgets that to be loved one must be lovable. Woman shines best and thrives best, not in the adulation of society, not in obtrusive self-assertion, but in the quiet and faithful performance of her home duties. The heat and stir of life is food for man's more rugged nature. The wholesomest passages of her life are those which, like the thesis of a symphony, are unpercussed and unaccented.

The banishment of the corset from the waists of those, who have attained to years of discretion, would be a great boon to the sex; but the profession is powerless against the Moloch of fashion. Their disinterested warnings in that direction, are like those of Cassandra, truthful, but unheeded. The family physician can, however, do the next best thing, and that with some show of success. He can solemnly adjure the tightly-harnessed mothers of the land, not to allow their grow-

ing and romping daughters to put on the maternal armor. He can earnestly recommend them to wear the "reform dress," or he can plead for the support of their underclothing, by the use of shoulder-straps or of skirt-supporters. This advice is not untimely, for I am assured, on the good authority of a fashionable corset-maker, that even the school-girl of the period has an ideal waist—a waist to which she squeezes, and laces, and tortures herself down, for the simple reason that it is always more slender than her own.

Too much brain-work, too little housework, is another crying evil of our land. Precocious cleverness is attainable only at the cost of physical and sexual development. Manifold diseases, many of them of a uterine complexion, date from the recitation-room. Nothing indeed more affects the regularity and the character of the monthly periods, than the modern system of educating girls. So common, indeed, is it for girls in boarding-schools to suffer, either from amenorrhœa or from irregular menstruation, that a general impression prevails in the community that some drug is secretly given at these schools to lessen the laundry work. In one school of great repute, so many of the girls missed their monthlies, that their physician very recently wrote to me, asking whether it was possible, as his patients suspected, "that, as their clothes were laundried in the building, something was given in their food or drink to produce this effect, for the purpose of saving the laundresses the disagreeable task of washing their napkins."

Under the high-pressure system of our public schools, even a class which ought to live by manual labor is made unfit for it. Hence, an inability to work attaches degradation to domestic labor, and town and city teem, therefore, with pale-faced and flat-chested women, who seem to have no other hold on life than a capacity for momentary enthusiasm; no other aim in life than to cultivate small hands, small waists, and small feet. Our great-grandmothers got their schooling during the winter months, and let their brains lie fallow for the rest of the year. They knew less about Euclid and the

classics, than they did about housekeeping and housework. But, they made good wives and mothers, and bore and suckled sturdy sons and buxom daughters, and plenty of them at that. From the age of eight to that of sixteen, our daughters spend most of their time, either in the unwholesome air of the recitation-room, or in poring over their books when they should be at play. As a result, the chief skill of the milliner seems to be directed, towards concealing the lack of organs needful alike to beauty and to maternity, and the girl of to-day becomes the barren wife or the invalid mother of to-morrow. Surely a civilization that stunts, deforms, and enfeebles, must be unsound! To reform these abuses, to reclaim woman to womanhood, to make wives *helpmates* in the true sense of the word, is then one great mission of the physician, a mission which he must cheerfully and dutifully accept.

Marcus Aurelius, St. Augustine, and other great and noble men, wrote with tender affection of what they owed to a mother's love, to a mother's care. If that imponderable essence, the mind, can be moulded and shaped by a mother's heed, why not the body? Why should not the culture of the one, be as much an object of maternal solicitude, as the culture of the other? To preserve, then, the priceless gem of health, let the physician teach mothers how to preside over the physical education of their daughters; how to pilot their frail bodies safely through the shoals and quicksands of girlhood, for at this time of life, an ounce of mother is worth a pound of doctor. To this end, girls should be early made to throw back their shoulders, to maintain an erect carriage, and to walk with toes pointed outward. This attitude puts into action muscles, which increase the obliquity of the pelvis to the trunk, and consequently lessens the downward pressure of the abdominal viscera upon the pelvic organs. Their clothing should be thick and warm, and supported by shoulder-straps; their shoes stout and roomy; their brains not overtaxed. Candies, doughnuts, and hot biscuits must be struck out from their fare; such trash has made our dentists world-renowned. Habits of regularity in sleep, as well as in the evacuations,

should be scrupulously enforced. Over-work in a constrained posture, especially that at the sewing machine, must be forbidden. Let them daily take sunshine and exercise in the open air. But, on the other hand, let them, during their monthly sickness, avoid picnics, sleigh-rides, dancing parties, and other imprudences. The risks from suppression should be vividly pointed out, else they could hardly be persuaded to forego pleasures which, at such times, are fruitful sources of mischief. Mothers should, therefore, diligently supervise the catamenial week of their daughters, and at that time forbid all over-work of brain and of body. Would that all women could be taught to look upon the law of periodicity in their nature, not as an affront to womanhood, not as the mark of a curse, but as a dower of health and of beauty if respected, as the leaven of life-long invalidism when abused!

Let mothers select the books which their daughters read. None of the namby-pamby trash of our circulating libraries, none of the prurient literature of the day, should cross the threshold of a well-ordered home. It heats the blood; it inflames the passions; it goads on to precocious pubescence; it throws a halo of false and sickly sentiment around the day-dreams of youth. Let mothers themselves be implored, neither to buy nor to borrow those vile pamphlets, which flood the length and breadth of this land; a literature which, while professing in good faith to treat of the conjugal relations, covertly panders to our worst instincts, and defiles with the slime of an impure fancy. While on the subject of books, let me here urge upon you the perusal, and the circulation among your patients, of two most excellent works: the one, "Wear and Tear," by Dr. S. Weir Mitchell; the other, "Sex in Education," by Dr. E. H. Clarke. A timely essay by Dr. Nathan Allen, on "Physical Degeneration,"* can also be read with much profit.

The sympathy between the breasts and the womb is so close as to have, in the treatment of post-partum hemorrhage, a positive therapeutic value. By condensing the womb and

* *Psychological Journal*, October, 1870.

by diverting the blood from it, lactation up to a certain point acts beneficially. But, by exhausting the woman's strength, and by producing morbid impressions upon the womb, over-lactation becomes in itself a cause of uterine disease. It also very seriously compromises the health of the sucking child. Whenever, therefore, a nursing woman finds that the act of suckling is followed by a pain in the back, or by other symptoms of uterine irritation; whenever she suffers from dizziness, dimness of vision, sore mouth, shortness of breath, palpitations of the heart, or from night-sweats, she should be urged by her physician to wean her child.

Nothing so certainly undermines the uterine health as the wear and tear of nursing the sick. The unwholesome air of a sick chamber, the close confinement, the selfish exactions of the patient, the broken rest, all tend to enfeeble the system. Then, the undue exertions made at arm's length, such as in lifting or in turning a helpless invalid, so violently strain the diaphragm and the abdominal muscles, as to force down and permanently displace the womb. Forewarned by the physician, the nurse, be she kin or be she hireling, will daily take a stroll in the open air, and in some way make up for loss of sleep.

LESSON XXXVIII.

THE RELATION WHICH FAULTY CLOSET-ACCOMMODATIONS BEAR TO THE DISEASES OF WOMEN.

PRIVIES; EARTH-CLOSETS.

THE sublime," writes the great Burke, "is an idea belonging to self-preservation." Emboldened by this definition, I shall offer no apology for addressing you this morning upon an unsavory subject. For it is one—as I hope to prove—closely allied to the moral and physical well-being of the mothers and daughters of this land, to the vigor of their offspring, and, as a consequence, to the health and happiness of the community, and to the strength of the state.

The important question of sewage, and cesspool-diseases, which is now agitating political economists, has a range far wider than those branches of medicine on which I lecture. I shall, however, limit my remarks to that aspect of it which directly concerns the good health, and more remotely the good morals, of women—viz., *the relation which faulty closet-accommodations bear to the diseases of women.*

In adults, the state of health denotes a state of equilibrium between wear and repair—between construction and destruction. But the statical condition is one necessarily disturbed by the smallest casting-weight. Hence, very slight indeed may be the cause, which deranges the nicely-balanced relation between the functions of the various organs of the body. Thus, by the imperfect and unpunctual performance of the excretory functions, our food becomes our poison. The lengthened detention of fæces in the bowels, or of the urine in the bladder, begets a host of disorders, in man as well as in woman. But it is in the latter that they are more manifest. Irregularity or postponement in the evacuations of the

body, is perhaps a very common cause of uterine and of pelvic diseases. For, not only are local congestions produced mechanically by the irritation or the pressure from hardened fæces, and flexions of the womb brought about by the straining efforts to empty the bowels; but the intimate interdependence between the pelvic and the uterine plexus of veins on the one hand, and the portal system on the other, is at the root of all manner of female complaints. A congestion in the one determines in the other a like condition, which in turn confirms and augments the disorder of the former. It is, indeed astonishing how quickly a woman's health declines from inattention to habits of regularity.

Over-distention of the bladder, by drawing up the cervix and by thrusting the fundus backward, is undoubtedly a very common factor in the production of retroflexions and retroversions of the womb. Almost every acute case of uterine displacement, and many cases of vesical catarrh, are thus brought about. The very worst case of irritable bladder that I ever met with, occurred in a lady who, thirty years previously, had traveled a whole day in a stage-coach without finding a fit opportunity for passing her water.

Again, costiveness is the recognized cause not only of hemorrhoids, of pelvic and uterine congestions, and of disorders of the digestive apparatus, but also of fæcal poisoning. For, if diseases breed from bad drainage and defective sewerage from without the body, how much more from bad drainage and defective sewerage within the body! Excretions retained in the body ferment and decompose; the pestilential gases thus generated, and the products of tissue-waste, being re-sorbed, degrade the blood, disable nerve-centres, and paralyze the action of vital organs. A mischievous reciprocation takes place, by which the cause and its effects aid and abet one another. Take for instance the liver: costiveness makes it secrete less bile, and this torpidity not only causes a uterine congestion, but also reinforces the habit of constipation. So, in a measure, with every other organ: blood-disorder leads to morbid nutrition of nerve-centres, and this in turn still

further degrades the blood. Thus is evoked that exaltation of nervous action, which so often becomes turbulent and uncontrollable. Hysteria, chlorosis, and climacteric perturbations, are always linked with defective hæmatisis.

Except as the result of this vicious circle, how else explain the proverbially bad health of women living in the country, and of the poorer classes of women in cities? Show me such a woman, and you show me a costive creature, one whose whole life is spent in an unnatural struggle with the lower, but needful, calls of her body. This evil is in itself bad enough; but, unfortunately, it does not end there. Upon the good health of the mother depends the good health of the child. Feeble mothers beget feeble children—children who are carried from the womb to the grave, or who peak and pine under the heritage of ill health.

Such, then, being the condition of the majority of American women, what is the cause? "Probably no single cause," writes a close observer, "has had so much influence in producing the peculiarly delicate condition for which women living in the country and in the small towns in America are notorious, as the discomfort, inconvenience, and frequent repulsiveness [and, I may add, indecent exposure] of their closet accommodations."

The ancients, who were wiser in their generation than we are in ours, set examples which we, in the nineteenth century, might in some respects usefully follow. The cloacæ of Rome are still the admiration of the architect. They were built so firmly as to have resisted the impetuous torrents of over seven hundred winters. To keep them in repair, public officers were appointed, who were called the *curatores cloacarum urbis*. Even a goddess—the fair Cloacina—was chosen to preside over them. But with us, how different!

In the teeming tenement-house of any of our large cities, there is usually but one closet, and that is invariably a cess-pool, wet and foul, reeking with filth, poisoned by noisome stench, defiled by lewd couplets or by obscene cuts, indecent from thin partitions and wide chinks, or from being preoccu-

pied by one of the opposite sex. Under such conditions, what woman can avoid schooling herself into the habit of resisting the evacuation of her bowels? In the small houses of tradesmen and of mechanics, the water-closet is rarely to be found; nor are the houses of the better classes always supplied with this luxury. The privy is, then, usually placed at the farther end of the yard, and approached by a long and unsheltered path. It is, therefore, almost inaccessible in bad weather or in dark nights, and is overlooked by the back-buildings of all the neighboring houses. To a delicate woman, the exposure to the weather is a serious risk; to one who is menstruating, it is a constant menace; while to the refined woman, the exposure to view compels the postponement of her physical duties to nightfall, or until driven to them by a sheer necessity which knows no law.

Nor does the condition of the closets in the country present a more agreeable contrast. In many parts of the Southern and the Western States a clump of bushes, the shelter of a rock, the nearest grove, afford the only accommodations. But, take the most thickly-settled States, where is the small farm-house whose privy invites, rather than repels, an operation of the bowels? The very name of *privy* is a misnomer. How seldom is the building hidden by clumps of evergreen, or masked by any other disguise than that of a euphemism! How often is it not at an embarrassing distance from the house,—at the end of a long trail, or, at least, of a long ill-kept path, which frequently runs parallel with a street or with a road! Where, in the country, and for the matter of that, in cities also, is not to be found the privy made up of rough boards rudely spiked together, with cracks wide enough to destroy all privacy, with a door without a bolt and generally hanging by one hinge, with a crescent-shaped hole for a window, and with its sole article of furniture a barrel of rasping corncobs? When is it ever sheltered from the rude blasts of winter; or not poisoned by noisome stench, acrid vapors, and unclean flies? After such an unsightly but truthful picture, can we wonder that the calls of nature

are looked upon as grievous dispensations of Providence, as hateful duties, which are to be put off as long as possible, and obeyed as seldom as possible?

Imagine now broad daylight with its busy traffic, a rainy or a dark night, the grass wet with dew, or the ground covered with snow, or the temperature, perchance, many degrees below zero. Under such circumstances, what woman can respond to the calls of nature, without putting herself to great discomfort, to great risk indeed if she be menstruating, or without blunting the edge of her womanly sense of decorum?

Nor is this last phase of the subject the least important. The shrinking from publicity in the performance of these functions, is neither "prudery" nor "false modesty," but a virtue of which our women may well be proud. In those countries where woman most disregards it, there is she least chaste, and there is the license of language least bridled. Whatever refines the body refines the mind, and conversely. The one reacts upon the other for better or for worse. Our remote forefathers, who scorned clothing and cleanliness, and who eased themselves, like their cattle, wherever the desire seized them, were in appetite little better than cannibals, in temper and morals lower than the brutes. When they began to wash themselves, they began to clothe themselves; and, after the culture of the body, that of the mind followed as a matter of course. Thus soap becomes a great civilizer. "Show me," said the great Liebig—or in words to this effect—"Show me the nation which consumes the most soap, and you show me one which has reached the highest grade of civilization." So with regard to closets. "Show me," say I, "the nation that gives the most comfort, the most privacy, the most solicitation, to the evacuations of the body, and you show me, in refinement, in education, and in morality, the foremost people on the face of the earth."

I have told you the bane; now what is the antidote? Clearly, such closets as a civilized Christian people—a people living in the nineteenth century—are not degraded in using;

closets that are decent, comfortable, and accessible; *closets that invite rather than repel*—those in which an operation of the bowels is not tantamount to being buffeted by Satan for a season. In cities, and in towns which are supplied with water-works and good drains, the use of the water-closet ought to become universal. In the country, where such a luxury can be attained by the rich alone, the earth-closet is the only substitute; and I cannot too strongly urge you to advise its use among your patients and neighbors. Set the example by using one yourselves; you will soon get back more than its money's worth of comfort, health, and privacy.

Although, at my request, this gentleman has kindly consented to exhibit to you the mechanism of his earth-closet, yet I am not the advocate of his patent, or of any one of the patents now in the market. You must select the one, which seems to you to meet best all the requirements. I am contending simply for the principle on which these earth-closets are based, and for the moral and the hygienic advantages which they offer. A portable closet, like this one, not larger than an old-fashioned arm chair, can be moved about from room to room, or be put where it will be both private and accessible. Nor will its presence poison the surrounding air, for there is no better disinfectant, no better deodorizer of organic refuse, than the dry earth contained in its hopper. Recognizing this property of earth, and also the laws of health, a wise Deity has, as the Creator, implanted in carnivorous animals the instinct of burying their excrement. As the great Lawgiver, He commanded the Jews to do the same thing. What cats and dogs do by instinct, man should do as well by instinct as by divine command. Further: animal refuse thus treated becomes a rich and available manure. Like that fabled giant of ancient mythology, it gains strength and vigor from contact with its mother—earth.

One thought more: As our title *doctor* indicates, we ought to be the teachers as well as the healers of the community—the educators and the refiners of those among whom our lot

is cast. I once knew a member of our profession, a general scientist, and withal a great botanist, who so moulded the tastes of his fellow-townsmen, that there is, I will venture to say, no other town in this country, which, in proportion to the number of its inhabitants, contains so many excellent botanists, geologists, mineralogists, conchologists, and entomologists. Few farmers in that county have not had a liberal education, and scores there are who can show a well-arranged *hortus siccus*, or give the botanical names of the indigenous plants and weeds. The town in which he lived has at this moment more successful schools—normal, public, and private—than any other of its size in the United States.

Now, what the late Dr. William Darlington did, each one of us can in a measure do, according to the talents vouchsafed to us. In scientific research, in the conflict of thought, our profession stands ever in the van. In that which refines, in that which uplifts soul and body, let it not lag behind. Begin, therefore, to teach as well as to heal; and the best lay-sermons you can at first preach are those against privies. Wage a successful crusade against these affronts to health and to decency, and you give better bone, better nerve, and better muscle to the state, and better morals to the people.

LESSON XXXIX.

THE SEXUAL RELATIONS AS CAUSES OF UTERINE DISORDERS.

CONJUGAL ONANISM, AND KINDRED SINS.

CERTAIN causes of uterine disease there are, which I would gladly leave unnoticed, for it is hard, in acceptable language, even to allude to them. But, so wide-spread are the evils resulting from them, that to pass them by would be a flagrant sin of omission. "Two things come not back," said the Caliph Omar, "the sped arrow and the spoken word." Deeply impressed by the wisdom of this saying, I shall try so to speak on these delicate subjects, as never to regret what I have spoken.

Arguing from a strictly practical and not from a sentimental point of view, but with all reverence, I hold, that the love interchanged between man and woman is no mere operation of the mind, no sheer intellectual process. However pure this passion may be, it is needfully two-fold in its nature. It is an alloy, made up, like ourselves, of body and mind; the grosser mould so interfluxed with the more ethereal, that the one finds its most passionate expression, in the fruition of the other. Abstract love between the sexes cannot, therefore, exist in any other sense, than that engendered by blood ties. Forgetful of this absolute law of our being, sentimentalists have judged too harshly of Abelard, and lavished too one-sided a sympathy upon Heloise. Without further comment, the ante-nuptial relations, at least such as custom commonly sanctions in this land—and, I believe, in no other—are, therefore, when prolonged, very disturbing elements to a young girl's health. Long engagements, by keeping up a wearing nervous erethism, are not only recognized, but

even classified, by alienists, as one of the causes of insanity in women. Much more frequently, the nervous exaltation is spent upon the reproductive organs; for there follows an awakening of sense, which is not, as in man, appeased by the distractions of business pursuits. Uterine trouble from this source, any open-eyed physician will over and over again see. Now, it is true that in love affairs the physician must be no meddler; match-making is certainly not his business. But, as a tried and valued friend, as a brother beloved, he can speak out when others may not even hint. Or, when consulted by an anxious mother about symptoms in her daughter, plainly referable to the reproductive organs, he can disclose the cause, and thus be the means of hastening on the cure.

If the caresses of lovers are prejudicial to good health, every like relation between the sexes must be exposed to like dangers. In too many rural districts, and in the lower classes of citizens, such license is tolerated in the social intercourse between the youth of each sex, as must be destructive both to good health and to good morals. But, since it is not to my present purpose to appear as a social reformer, I shall confine my remarks to the hygienic aspect of the subject. The "old folks" are shelved too soon. Young people are left too much to themselves, and thrown too much together. Their social gatherings are too rarely presided over by their mothers or their seniors. As a very natural consequence, their games become coarse, their forfeits immodest, and little by little this freedom from restraint is liable, finally, to degenerate into such gross familiarities, as would be improper even between affianced lovers. An unnatural sexual excitement is thus kept up, which must do physical harm. Of the moral harm I say nothing. In this matter, I am plainly at a loss to see, how a physician can interfere in any other way, than by setting a good example in the order and decorum of his own household. A nimbler wit than mine may work out some better way; if so, his be the credit: I do but throw out hints.

The excesses of the honey-moon journey, conjoined with its fatigues and its discomforts, are too often the starting-point

of uterine disease. Here, again, will the family physician delicately proffer his counsel. In chosen words he can hint at moderation in all things, and suggest the avoidance of the usual exhausting round of travel and of sight-seeing. Such words will then, indeed, be words spoken in season. He must, still further, take cognizance of the sexual relations between husband and wife, relations which, when abused, are productive of much mischief. All excess in that direction he will discountenance. Unmastered importunity and too submissive an affection must be met by separate beds, by uncommunicating rooms, and if need be, by strong expostulation. Criminal abortion he must denounce, and that boldly, if he values the health and the happiness of his fellow-creatures, and a clear conscience before God and before man.

But there are yet other secret sins which, like the plague of the frogs, creep into our "houses, and bed-chambers, and beds"—sins which, although vile and filthy, concern us as physicians. The wise son of Sirach has laid down the abstract truth, that "the knowledge of wickedness is not wisdom;" and yet, for the correct interpretation of diseases, we must intrepidly search out their causes, whether moral or physical, however loathsome or impure they may be. Receive, then, these necessary supplements to your instruction, in the attitude of true students; for to such, the knowledge of immorality cannot be immoral.

Early in the practice of your profession, you will, I am sorry to say, find out that many of your patients, who should be the heads of large families, are practicing detestable arts to avoid offspring. You will, on the other hand, be approached, perhaps indeed be hard pressed, by husbands, and, for the matter of that, by wives also, for some method of congress unattended with the risk of impregnation. You will also be consulted for the mental and bodily infirmities resulting from these and other sexual sins. You must not, therefore, go out into the world ignorant of these evils, and consequently incompetent to grapple with them. It is, however, so hard a task, to discuss such subjects in acceptable language,

that I confess to some squeamishness, and would much rather refer you to suitable text-books, were there any. But, unfortunately, there are none on these subjects, although our land is flooded with a prurient literature treating of the conjugal relations. Impudent quacks and men of battered reputations must not be your guides; far better it is for you to learn a new thrust of fence from a friendly foil, than from the stab of a foe.

My purpose is, less to discuss the moral obliquity of these secret sins of the community, than to show the resulting disorders. Yet I shall not limit myself to the one point of view, for the conjugal relation is twofold in its nature; it has a moral as well as a physical expression, but so interwoven that it is hardly possible formally to dissociate them. Nor would it be wise for a physician so to do; for who so well as he can determine how far a disturbance in the one will affect the other? Moreover, so irreparable is the moral and physical degradation resulting from these vicious sexual relations, so damaging are they to good health and to good morals, so fatal to national prosperity, that I cannot go far astray in assaulting them with every available weapon.

You have all had a religious training, and respect the teachings of the Bible; let us see what light they throw upon the conjugal relation. The first words addressed by God to our first parents conveyed the following blessing and command: "And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth." The same blessing and the same command, in precisely the same words, were twice given to Noah. Abraham and Ishmael received the same blessing, and so did Isaac thrice in one chapter. Laban's household sent away their sister Rebekah with the same blessing. "Give me children, or else I die," was the cry of Rachel. Jacob called his offspring "the children which God hath graciously given thy servant;" and the same patriarch, when a-dying, raised himself upon his staff in order with greater solemnity to invoke upon his beloved son Joseph "blessings of the breasts and of the womb." The

Psalmist declares that "children are an heritage of the Lord, and the fruit of the womb is his reward;" while the curse pronounced upon idolaters by an indignant prophet is, "Give them a miscarrying womb and dry breasts." In Exodus we read, that if a man "take him another wife, her food, her raiment, and her duty of marriage, shall he not diminish." Throughout the Old Testament, you will find that fruitfulness was regarded by Jew and Gentile as the greatest of earthly blessings, and that, as such, it was the reward of the righteous, and, as such, it was withheld from the wicked. How a profanation of this blessing was regarded by God, you all know from the history of Onan, who was slain for disobeying a Divine command by resorting to one of the "preventive measures" in vogue at the present day. Again, in the New Testament we find St. Paul giving the following advice to the married Christians at Corinth: "Defraud ye not one the other, . . . that Satan tempt you not for your incontinency. Let the husband render unto the wife due benevolence; and likewise also the wife unto the husband," etc. I have not the time to quote all that the apostle says upon the subject; but, mind you, this advice was given in troublous and persecuting times—times in which the temptation was great to prevent the increase of families—times to which the words of our Saviour were especially applicable: "Woe unto them who are with child, and to them that give suck in those days."

To these Scriptural precepts and blessings you may perhaps object, that they were designed for special purposes, and that, as such, they cannot concern the present generation of men. While unwilling to admit this, I reply that there is a natural religion as well as a revealed religion: the one, God's book; the other, Nature's—a "Second Bible," as Bacon happily terms it. You have heard what the one enjoins; now listen to the teachings of the other. Let me turn to our Case-Book and read out the history of one of our clinical patients. Some of you have seen her in my private room, but, for obvious reasons, I have not brought her before the assembled class.

A. B., aged 30, married ten years ago, has had two children, one of them dying shortly after birth. Six years ago she and her husband came to this country and opened a small store. She was at that time in robust health, "very happy," and cheerfully waited upon their customers. For no assignable reason, her health soon began to fail, and six weeks ago she came for advice in a truly pitiable plight. To use her own language, she was "very weak and miserable;" "crying all the time;" "cannot remember anything for ten minutes;" forgets the price of the goods in her husband's store; was "constantly mislaying needful articles, and making mistakes in making change." She was "very suspicious," fancied "that everybody was against her and talking about her," and confessed to being extremely jealous of her husband. In addition to these mental disturbances, she eructates large quantities of wind, is obstinately costive, has violent palpitations of the heart, and cannot go up one flight of stairs without getting out of breath. She often staggers, loses consciousness, and sometimes falls from vertigo; is annoyed by a persistent *globus hystericus*, and has no appetite whatever. The catamenia appear every three weeks, are abundant, but unaccompanied with pain. She has, however, a constant pain in the sacral and in the left infra-mammary region; also a frequent desire to pass water, and much "bearing-down" of all the pelvic organs.

Without wearying you with every detail, in one word, the subjective symptoms of uterine disease, which she presented, were more numerous and more marked than I had ever before seen in one patient. In making a vaginal examination—to which she reluctantly submitted—I was struck with the excessive sensitiveness of her tissues, and with the uncontrollable excitement under which she labored—symptoms hitherto in my experience limited to unmarried women addicted to self-abuse. I found the vagina crimson and hot, the womb tender to the touch, intensely congested, somewhat prolapsed, and in the first degree of retroflexion. The sound, passing through a patulous os internum, caused much pain at the fundus, and a slight hemorrhage upon its withdrawal. The os externum was surrounded by a collar of erosion, and plugged with the characteristic glairy secretion. Finally, she flinched from any pressure, however light, over each ovarian region. The significance of these symptoms I explained to her, but I need not to you.

She then took me aside, and, unsolicited, told me her history. Being in straitened circumstances upon their arrival in this country, and withal anxious to lay by money, she and

her husband agreed to have no more children. With this view, she had submitted to the following fraudulent and one-sided expedient: at the height of the orgasm, the husband withdraws from her person, and thus sins as Onan sinned. For six years, such incomplete coitions had been practised, usually as often as five times, and never less frequently than three times a week. She had at first attributed her ill health to change of climate, but, quite recently, had begun to suspect its true cause, from an unexpected improvement in all her symptoms, during the casual absence of her husband on business.

Prompted by this suspicion, she came to consult me as to its correctness, and actually, in case it was confirmed, to learn from me some other preventive method of congress. I explained to her the sinfulness of her conduct, and urged her to receive the approaches of her husband in a natural way, as otherwise nothing could be done for her. This, however, she flatly refused to do, saying she would much prefer a separation, or even a divorce from him. Upon inquiry, I learned that her "husband was not the man he used to be;" that he was morose and dyspeptic, complaining much of general weakness and loss of appetite. Two weeks later, she came with much glee to say that by a mutual agreement this incomplete act of coition was in future to be limited to twice a week, and that she was now ready for treatment—whereupon I refused to have anything more to do with her; and I have not seen her since.

You have heard, gentlemen, this sad history—the history of a woman whose health is shattered, whose morals are perverted, whose mind is verging towards insanity. Now, what physical law of her being, what moral obligation, has been broken? Why has Nature been so resentful, and why these fierce reprisals? These are questions which press for an answer.

The sexual instinct has been given to man for the perpetuation of his species; but, in order to refine this gift and to set limits to its abuse, it has been wisely ordered that a purely

intellectual quality—that of love—should find its most passionate expression in the gratification of this instinct. Dissociate the one from the other, and man sinks below the level of the brute. Destroy the reciprocity of the union, and marriage is no longer an equal partnership, but a sensual usurpation on the one side, and a loathing submission on the other. Consider the moral effects of such shameful manœuvres; wedlock lapses into licentiousness; the wife is degraded into a mistress; love and affection change into aversion and hate. Without suffering some penalty, man cannot disturb the conditions of his well-being or trespass beyond its limitations. Let him traverse her physical laws, and Nature exacts a forfeit; dare he violate his moral obligations, an offended Deity stands ready to avenge them. That this law is immutable, witness, from the history read to you, the estrangement between husband and wife; witness his ill health and ill temper, and the wreck of body and of mind to which she has been reduced.

The husband suffers mentally, because no *man* can behave in so unmanly a way without a keen sense of self-abasement, without being stung by the chastisement of remorse. Dishonor the body, the temple of the soul, and you dishonor the soul. Again, by this cowardly recoil, his enjoyment in the act is so blunted, that he is tempted to seek elsewhere for those pleasures which are denied him at home. Further, he suffers physically, because, although he passes through the crisis of the sexual act and completes it in that sense, yet, owing to his withdrawal from the person of his wife, just before the moment of ejaculation, this acme of the orgasm, by the lack of the normal and needful adjuvant—viz., the rugous and constringing vagina—is not sufficiently prolonged to wholly empty the *vasa deferentia*. Enough of the semen remains behind, to tease his organs and to kindle in him desires, too importunate to tolerate any great self-control. He is thus goaded on to such sexual excesses as no brain nor brawn can long support; for a constant drain on the life-giving fluid, implies a constant expenditure of nerve-force. Early ex-

haustion and premature decrepitude will inevitably ensue, if this practice of "conjugal onanism" be persisted in. Nor is this name a misnomer; for there is no essential difference between this habit and that of masturbation. Both injure in precisely the same way, and for precisely the same reasons. It does, indeed, seem to be the law of Nature, that man must suffer the punishment of the onanist, if he parts with the "seed of another life" in any other way, than in that by which it tends to become fruitful.

The wife suffers the most, because she both sins and is sinned against. She sins, because she shirks those responsibilities for which she was created. She is sinned against, because she is defrauded of her rights. Lawful congress, completely performed, so far satisfies an imperious instinct, that attendant local congestions are at once relieved, and to great nervous excitement succeeds a calm repose of body and mind. On the other hand, conjugal onanism provokes in her, desires which keenly solicit that very gratification, which is denied by the nature of the act. The excessive stimulation of the whole reproductive apparatus remains unappeased. A nervous super-excitation continues, which keeps up, as in our patient, a sexual excitement and a hyperæsthesia of the parts. By forfeiting her conjugal rights, she does not reach that timely conjuncture, which loosens the tension of the coarctative muscles of her erectile tissues. Hence, the congestive orgasm of the vagina, womb, oviducts, and of the ovaries, does not at once pass away, but persists for some time—perhaps is not wholly effaced before another incomplete coition brings a fresh installment. Thus arise engorgements, erosions, and displacements of the womb, and inflammation of its appendages, accompanied, of course, by all those protean mental and physical manifestations, which I have so often pointed out to you. She takes distorted views of life and of the marriage relation, and harbors resentment against her husband as the author of all her ills.

But we have not yet done with the train of evils. The uterine, ovarian, and vaginal plexus of veins, inosculate

freely with the hemorrhoidal vessels, and consequently with the *venæ portarum*. Hence, the turgescence of the one group of blood-vessels leads to the engorgement of the other, and the persistent congestion of the intra-pelvic veins determines portal obstruction, and conversely. The great vascularity, and the erectile structure of the reproductive organs, favor this turgescence. As a consequence, functional derangements of the liver are commonly associated with uterine disease. No gynecologist has failed to observe, the alternate relation of cause and effect between these two conditions. To this interdependence may we refer the costiveness, the vertigo, the loss of appetite, the dyspeptic melancholy, and the suspicious nature of our patient.

Again—for the ill effects of such practices accumulate—the very barrenness, aimed at by these criminal expedients, is in itself a source of disease. In sterile women, the absence of pregnancy and of suckling prevents a break in the constantly-recurring catamenia, and the physiological congestions of the womb augmented by the sexual congestions are, by ceaseless repetition, liable to become pathological. Add to this, the unrelieved congestions arising from incomplete intercourse, and a prolific source of uterine and of hepatic disorders is at once manifest.

I wish, in this relation, to call your attention to another source of sexual trouble, for which your advice will be sought. Either from undue ardor on the part of the husband, or from the too frigid nature of the wife, the sexual crisis with him is over before hers is reached. Such misadventures are productive not only of unhappiness, but also of disease. Here, as in conjugal onanism, the female reproductive organs are kept in a state of congestion, which is followed by like ill results, the difference being only in degree, and not in kind. For this lack of reciprocation—not, however, necessarily fatal to impregnation—you will counsel to the husband, the practice of some self-denial as regards the frequency of congress, and greater self-control during the act, together with a recourse to such promptings, as a warm and an honorable affection may suggest.

But, to return from a digression, there are other artifices—nay, even equipments borrowed from the brothel—for the purpose of avoiding conception, which may well alarm publicists and statesmen. For, vile as they are, they have received the open sanction of those English political economists, who forget that crime and vice and human suffering in their land are due, less to “over-population and large families,” than to absenteeism, to the laws of primogeniture and of entail, to the grasping avarice of the rich, and to the intemperance, ignorance, and shiftlessness of the poor. All these expedients operate, by directly preventing the access of the spermatozoa to the uterine cavity, by destroying them, or by washing them away; but they are all hurtful equally to mind and to body. If it is hazardous for an overheated stomach to receive a glass of water—its natural and accustomed beverage—how much more will it be, to deluge the over-congested womb with such foreign fluids as simple or astringent injections! On the other hand, those mechanical contrivances for limiting the range of the spermatozoa, so blunt the pleasure as to lead to unfaithfulness or to their disuse. Moreover, in common with other teachers, I am old-fashioned enough to believe, that pregnancy is a needful condition to healthful and happy marriages, and further, that coition is innocuous only when complete in both husband and wife, and when the germinal fluid bathes her reproductive organs. It is not always possible to trace the relation between cause and effect; some link in the chain of sequences often eludes our search. The *modus operandi* of many of our most common drugs is not known, and yet our confidence in them is not shaken, because the counter-weight of our experience is greater. Therefore, for no other reason than that the common experience sanctions this postulate, I believe that the semen itself, aided of course by the general relaxation following the crisis, has a special property of allaying the congestive orgasm and the vascular turgescence of the venereal excitement. Be the mode what it may, at any rate so much disorganization of uterine structure takes place, in those women who have kept

themselves sterile, that they are rarely free from some womb disorder; and when, as they advance in life, they yearn to have children, they find to their dismay that they cannot conceive. Often and often, have I been begged by childless women, now longing to become mothers, to undo the mischief caused by such practices.

For the limitation of families, some conscientious political economists recommend absolute abstinence. But, if the "nervous erethism" of long engagements is assigned by alienists as a common cause of insanity, and by physicians as a frequent source of uterine disturbance, what derangement of body and of mind may not spring from this forced continence! Perhaps, however, we are wasting words on impossibilities. There is a wide-spread delusion, as old as the art of medicine itself, that intercourse, after the tenth day following the cessation of the menses, is not attended with the risk of impregnation. But ovulation is not necessarily menstruation; and he who constructs domestic time-tables or trusts to his almanac, will find that accidents can happen in the best-regulated family. If he protract the time of intercourse to a still later period after menstruation, he is liable to inseminate an ovum near the os uteri, and thereby produce placenta prævia. If he perform the act during menstruation, he is likely to bring about a pelvic hæmatocele, a pelvic peritonitis, or even an extra-uterine pregnancy. Over-lactation, to avoid the dreaded accident of motherhood, is not only a very fruitful source of disease in women, but it very seriously compromises the health of the child; for it causes rachitis, cholera infantum, and the wasting diseases of children. On the other hand, if the mother, when pregnant, continues to nurse her child, in order to bring on an abortion, the child is sure to suffer from the deteriorated milk; and the mother, from the double demand upon her vital energies.

In a late discussion before the British Medical Association, in which some of the foremost men of England took part, it was the unanimous verdict, that over-breeding does not produce ill-health so much as efforts to prevent conception.*

* *British Medical Journal*, Aug. 31, 1878, p. 321.

The venerable West accuses "the imperfect performance" of sexual intercourse, as one of the frequent causes of uterine engorgement, and of hypertrophy of the cervix.* I have seen four very remarkable cases of great turgidity of the womb, accompanied by excessive sensitiveness of the cervix, which were due to such practices. Bergeret records nine cases of acute metritis, with two deaths. Like disorders, from like causes, I have so often seen, that, when called to a case of pelvic inflammation, I take it for granted that means have been adopted for preventing conception.

"In man," as Barnes very forcibly shows, "the ejaculation of the semen ends his physiological duties; but a woman, to complete the cycle of reproduction, must pass through conception, gestation, and parturition." Hence, a disregard for these requirements of her very nature will assuredly predispose to uterine disorders. Marriage, without children, acts like a slow poison on the constitution of most women.

But, there is yet another reason, and a very strong moral one, why the wife should not remain childless. There can be no question, that the blood of the father mingles with that of the mother, through the medium of the child in utero. Hence, the transmission of blood-diseases from husband to wife. Hence the indelible impressions made upon a wife by the father of her offspring—impressions, both mental and physical, which, by character or by resemblance, she often transmits to her children by a second husband. Now, as Dr. J. P. Chesney suggests,† may not this account for the similarity of character and identity of tastes, and, indeed, for that wonderful personal resemblance, which sometimes develop between husband and wife? And does not this requisite alone fulfill the Divine interpretation of marriage, that "they are no more twain, but one flesh?"

There are, in fact, no harmless or available means for thwarting nature's plain intention; for, if they should not happen to injure the body, they assuredly will the mind. How immoral

* *Lectures on Diseases of Women*, p. 80.

† *Medical and Surgical Reporter*, Dec. 7, 1872, p. 490.

must be the effect when husband and wife meet, not "to endear each other"—as Jeremy Taylor quaintly puts it—but to adjust accoutrements, to compound antidotes, and to consummate, with prearranged precautions and cold-blooded calculations, a union which, for its perfect mental and physical fruition, should be spontaneous and unrestrained! All these artifices soil the purity of thought, and degrade marriage into a carnal compact which regards alone the needs of the flesh.

Such, then, are my views upon these so-called "misery checks" and "common-sense measures;" and I feel that they cannot be gainsaid. I dare any political economist, to show me one innocuous expedient whereby conception can be avoided. I challenge him to name a single preventive plan, which will not do damage either to good health or to good morals. Even natural sterility is a curse. Show me a house without children, and, ten to one, you show me an abode dreary in its loneliness, disturbed by jealousy or by estrangement, distasteful from wayward caprice or from unlovable eccentricity. Depend upon it, gentlemen, there are no thornless by-paths by which man can skulk from his moral and physical obligations; no safe stratagems by which he can balk God's first blessing and first command. Therefore, as hygienists, if not as moralists; as physicians, if not as patriots; as guardians of the public health, if not as philanthropists, I charge you to frown upon such practices and take a bold stand against them. Else, see to it that in the end, you are not held to a strict account for the knowledge you have this day gained.

THE END.

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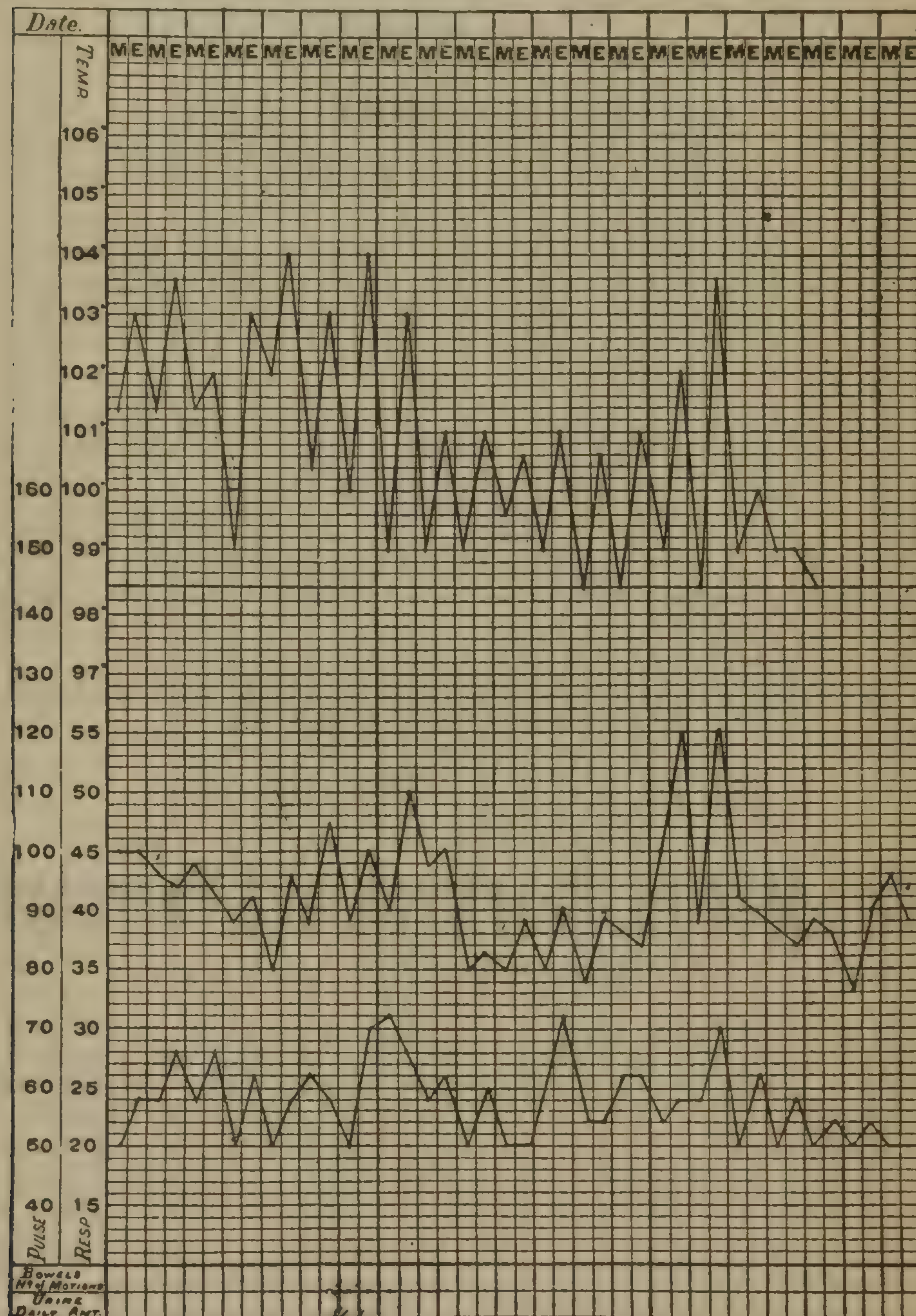
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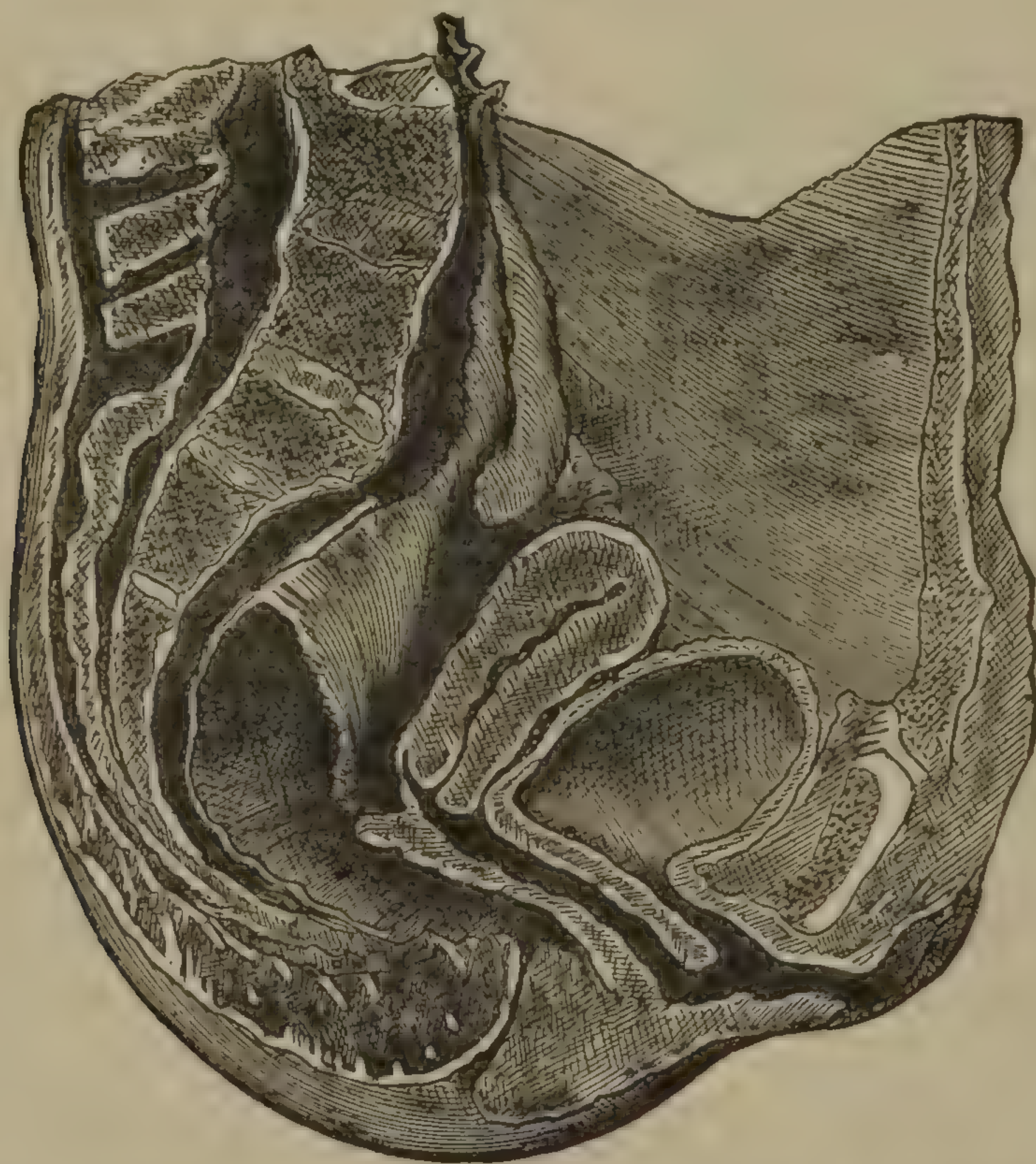
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Obstetrician to the Philadelphia Hospital, and Lecturer on Diseases of Women and Children; Surgeon to the Maternity Hospital; Physician to St. Joseph's Hospital; Fellow of the College of Physicians of Philadelphia, etc.,

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A.	MEDICINAL PROPERTIES.	MINUTE DOSE.	LARGE DOSE.
(a) Aconitine.	Narcotic and Apyretic.	1-500 gr.	1-16 gr.

Following this, Preparations of the Pharmacopœia, each tabulated. For example:

TINCTURAL.

TINCTURA.	DRUG.	AMOUNT.	ALCOHOL.	DOSE.
* Aconiti.	{ Aconite. Tartaric Acid, 60 † P.	5½ oz. to 24 gr.	100	1 to 3 drops.

* 60 Fineness of Powder as per U. S. P.

† P. Macerate 24 hours. Percolate, adding Menstruum to complete (1) pint tincture.

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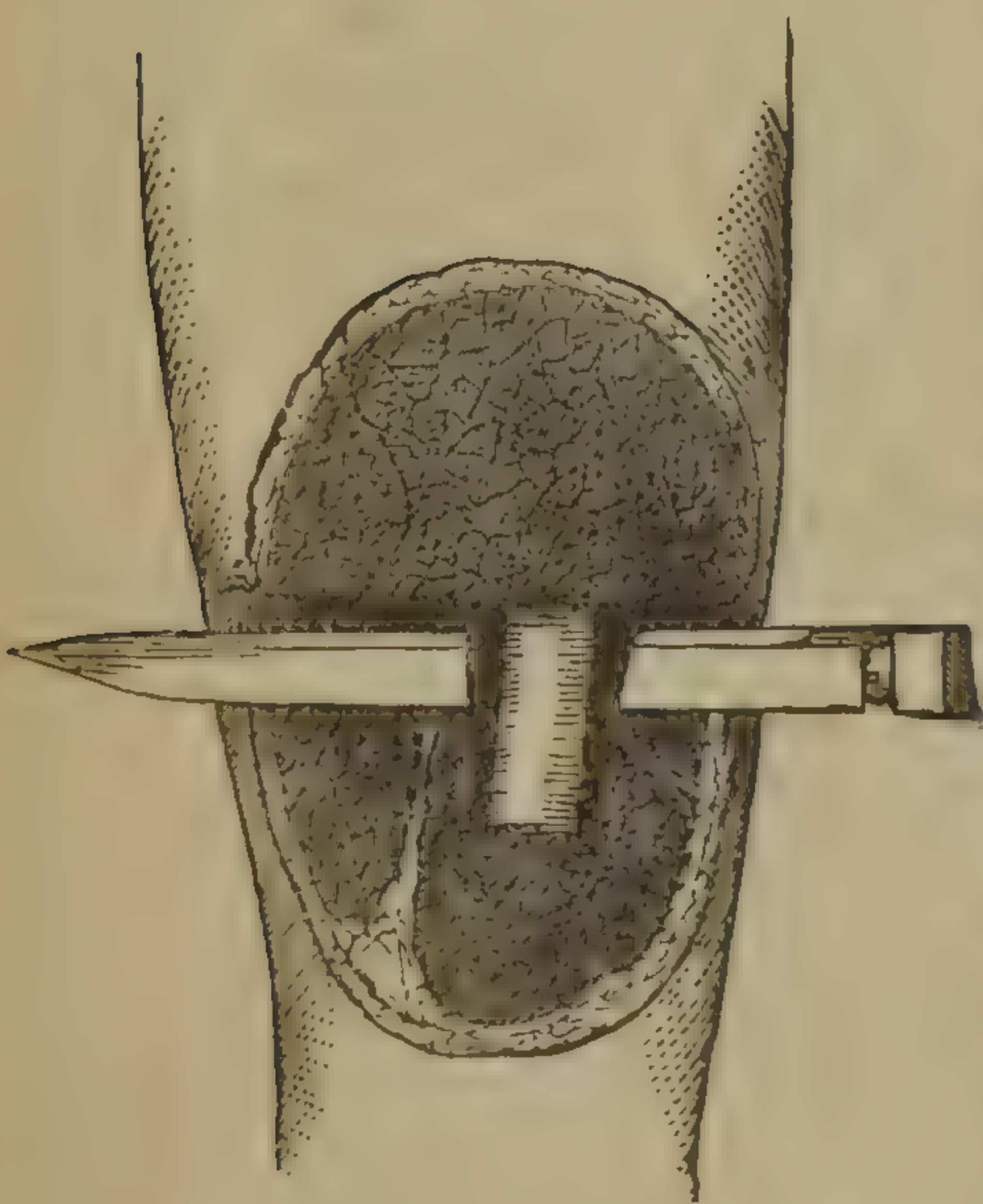
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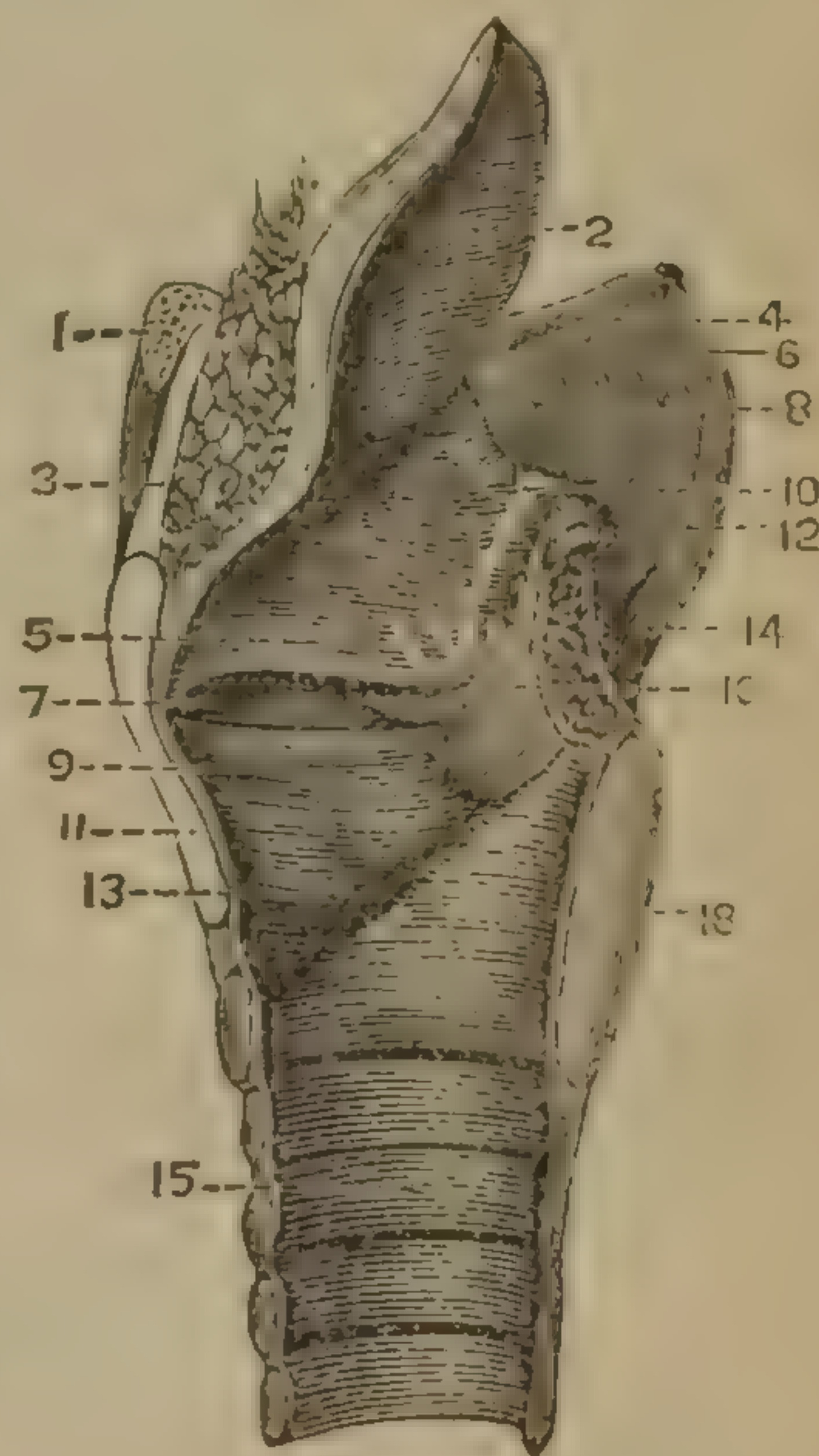
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